APRIL 24, 1937

Railway Age

APR 22 1937

Founded in 1856

TRANSPORTATION LIBRARY

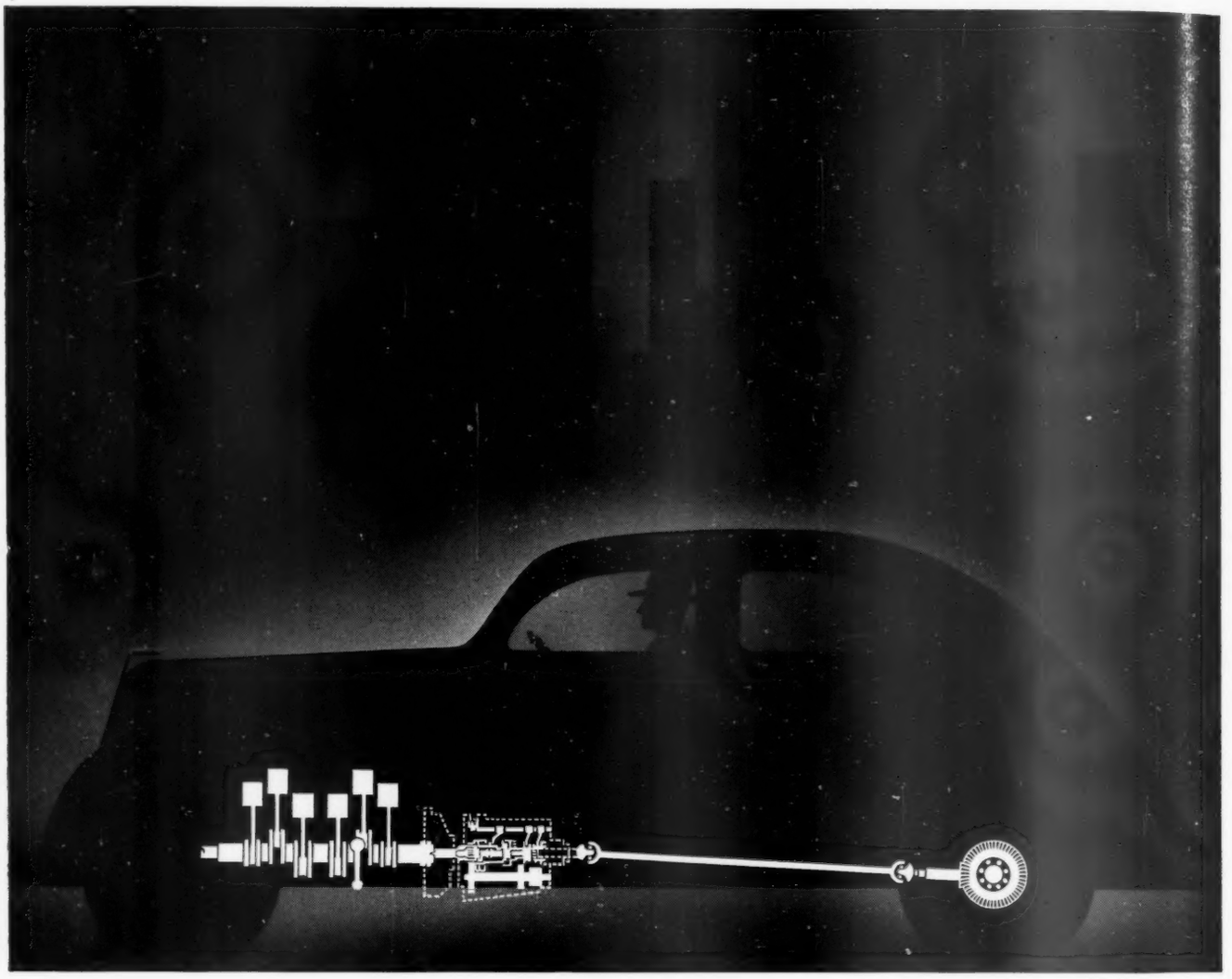
EMC DIESEL SWITCHERS

Snappy Performance and Appearance

EMC

With a rugged and unusually snappy engine, EMC Diesel Switchers are capable of rapid acceleration — quick getaways and faster and smoother switching. • Their profitable operation becomes most convincing when their high availability with low operating and maintenance costs pile up additional net income over many years of satisfactory performance.

ELECTRO-MOTIVE CORPORATION
SUBSIDIARY OF GENERAL MOTORS
LA GRANGE, ILLINOIS, U.S.A.



The "backbone" of the modern automobile

To THE automotive industry's everlasting credit it can be said that it has never relaxed in striving to make motor cars still safer, still more efficient, and of still greater dollar-for-dollar value. "Make it tougher, stronger, longer lasting," is the relentless self-imposed command. And, though the limits often seem to have been reached, engineering and metallurgical science usually manages to raise the standard another notch.

Molybdenum and Climax's years of field and laboratory investigations have contributed notably to this progress. Through improved steel-alloy analyses, the "backbone" of the modern automobile has attained a reach toward perfection undreamed of a decade ago.

"Moly" steels are going into crankshafts, connecting rods, steering arms and knuckles, transmission gears, propeller shafts, universals, ring-gears and pinions, rear axle shafts. . . . Not only making them better parts, but cutting production costs through improved heat-treating, forging, carburizing and machining.

VISIT THE CLIMAX EXHIBIT IN BOOTHS 313, 315, 317 AT THE FOUNDRY SHOW, MILWAUKEE—MAY 3 TO 7

Engineering and production heads are invited to send for our technical book, "Molybdenum." Our accumulation of data and the facilities of our laboratory are available to any concern interested in "Moly" toward solving difficult ferrous problems. Climax Molybdenum Company, 500 Fifth Avenue, New York City.

PRODUCERS OF FERRO-MOLYBDENUM, CALCIUM MOLYBDATE AND MOLYBDENUM TRIOXIDE

Climax Mo-lyb-den-um Company

MOLY

Published weekly by Simmons-Boardman Publishing Corporation, 1309 Noble Street, Philadelphia, Pa. Entered as second class matter, January 4, 1933, at the Post Office at Philadelphia, Pa., under the Act of March 3, 1879.

Published every Saturday by the Simmons-Boardman Publishing Corporation, 1309 Noble Street, Philadelphia, Pa., with editorial and executive offices: 30 Church Street, New York, N. Y., and 105 West Adams Street, Chicago, Ill.

SAMUEL O. DUNN, *Chairman of Board*
HENRY LEE, *President*
LUCIUS B. SHERMAN, *Vice-Pres.*
CECIL R. MILLS, *Vice-Pres.*
ROY V. WRIGHT, *Vice-Pres. and Sec.*
FREDERICK H. THOMPSON, *Vice-Pres.*
ELMER T. HOWSON, *Vice-Pres.*
F. C. KOCH, *Vice-Pres.*
JOHN T. DEMOTT, *Treas.*

CLEVELAND
Terminal Tower

WASHINGTON
1081 National Press Building

SEATTLE
1038 Henry Building

SAN FRANCISCO
111 Sutter Street

LOS ANGELES
Union Bank Building

Editorial Staff
SAMUEL O. DUNN, *Editor*
ROY V. WRIGHT, *Managing Editor*
ELMER T. HOWSON, *Western Editor*

C. B. PECK
W. S. LACHER
ALFRED G. OEHLER
F. W. KRAEGER
E. L. WOODWARD
J. G. LYNE
J. H. DUNN
D. A. STEEL
R. A. DOSTER
H. C. WILCOX
NEAL D. HOWARD
CHARLES LAYNG
GEORGE E. BOYD
WALTER J. TAFT
M. H. DICK
W. J. HARGEST
E. J. PHILLIPS
JOHN H. KING

The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.).

Subscriptions, including 52 regular weekly issues, and special daily editions published from time to time in New York, or in places other than New York, payable in advance and postage free. United States, U. S. possessions and Canada: 1 year, $6.00; 2 years, $10.00; foreign countries, not including daily editions: 1 year, $8.00; 2 years, $14.00.

Single copies, 25 cents each.

H. E. McCandless, Circulation Manager, 30 Church St., New York, N. Y.

Railway Age

With which are incorporated the Railway Review, the Railroad Gazette and the Railway Age-Gazette. Name registered U. S. Patent Office.

Vol. 102 April 24, 1937 No. 17

In This Issue

Coal Dumpers Built By N. & W. Embody Latest Improvements . Page 704

A description of these new facilities at Lambert Point, Va., which incorporate new features in design and in automatic operation and control.

Timken Research and Test Laboratory in New Quarters 709

An article describing modern equipment installed for studying the performance of large railway bearings and axles.

Railroad Scrap Sales Totaled $57,000,000 In 1936 . . . 713

Gives results of *Railway Age* survey which shows large gains in revenue obtained from the sale of scrap and the improvement in the average turnover of materials.

EDITORIALS

What Regulation in Future? 701
Illumination of Grade Crossings 703

GENERAL ARTICLES

Coal Dumpers Built By N. & W. Embody Latest Improvements 704
Freight Car Loading 708
Timken Research and Test Laboratory In New Quarters 709
Future Shippers and Passengers, by William S. Wollner 711
Railroad Scrap Sales Totaled $57,000,000 in 1936 713
Traffic Clubs Hold Meeting at New York 718
Illumination For Grade Crossings 719

MOTOR TRANSPORT SECTION

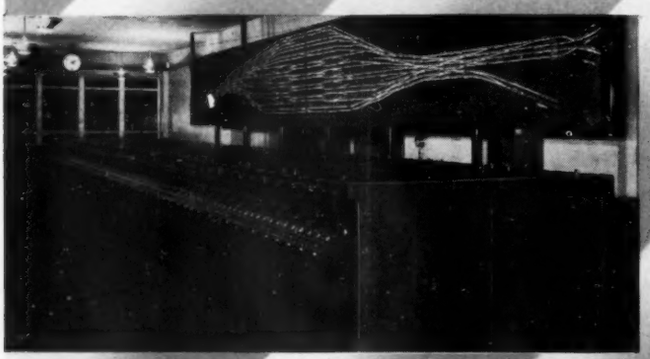
Central Vermont Features Modern Transportation 721
Bus Air Conditioner 724
International Harvester's New Truck Line 725
Rail-Highway Co-ordination Succeeds in England, Part II 726
Greyhound Stations 728
I. C. Goes to Trucks 728

COMMUNICATIONS 729

NEWS 731

The Railway Age is indexed by the Industrial Arts Index and also by the Engineering Index Service

STOP AND GO TRANSPORTATION IS COSTLY!



In every industry progress points in the same direction—elimination of intermittent, stop and go methods and the application of the Continuous Flow principle. This is particularly true in transportation. Through the installation of modern signal systems and rolling stock the railroads are reducing delays. Trains are covering their runs in much less time. The railroads are increasing operating efficiency and safety and decreasing costs. Modern signaling is a self-liquidating investment that pays immediate dividends. » » » »

"Union" modern signal systems are backed by fifty-six years of experience in the development, design, production and application of signals that accelerate service with increased safety. They are dependable signals and their reputation for long life means consistent economy.

1217

1881 Union Switch & Signal Co. 1937

SWISSVALE, PA.

NEW YORK MONTREAL CHICAGO ST. LOUIS SAN FRANCISCO

RAILWAY AGE

What Regulation in Future?

The decisions of the Supreme Court upholding the Wagner National Labor Relations Act have opened the way for a revolution in the relations between the federal government and many large industries. The Court held, in effect, that most large industrial corporations are as much engaged in interstate commerce as the railways. After having quoted precedents in railroad cases the Court remarked: "It is said that this exercise of federal power (i.e., over carriers) has relation to the maintenance of adequate instrumentalities of interstate commerce. *But the agency is not superior to the commerce which uses it. The protective power extends to the former (i.e., carriers) because it exists as to the latter.* * * * When industries organize themselves on a national scale, making their relation to interstate commerce the dominant factor in their activities," they are for that reason subject to federal regulation of their labor relations. But if the dominance of interstate commerce in their activities makes their labor relations subject to federal regulation it must make all their activities subject to it.

Prices and Rates in Interstate Commerce

This conclusion presents some important questions to the leaders of many large industries. Do they desire for their industries such a policy of federal regulation as is now applied to the railways or prefer a large reduction in railway regulation? They will soon have to answer this question. The decisions of the Supreme Court have deprived them of all legal ground for contending that the railways should be federally regulated one way and most other large industries not at all or in entirely different ways. Not only the way they deal with labor, but their prices and profits are now as much subject to regulation by Congress as the railways' rates and profits. The Supreme Court did not actually say this, but it is as plain as a pikestaff from its reasoning.

What kind of regulation of the railways and themselves, then, do other large industries want? The railways recently tried to reduce their rates on meats and packing house products from Chicago to various points in central territory to meet truck competition. The Interstate Commerce Commission refused to allow the reductions because it held they would result in undue prejudice to packers at Detroit, Cleveland, Cincinnati and other places who opposed them. The packers, under recent decisions, are as much engaged in interstate commerce and subject to regulation as the railways. Do the packers who successfully oppose the changes in freight rates the railways desired to make want the Federal Trade Commission or the Interstate Commerce Commission given the same power to regulate the prices paid and charged by them that the latter Commission now has to regulate railway rates? If they desire freedom from federal regulation of their prices how can they consistently or safely invoke federal regulation of railway rates?

Attitude of the Farmers

The movement for state and federal regulation of rates was originally started by the farmers. There has been much discontent among them because the prices of their products were too low as compared with the prices of things they had to buy. What is to prevent the farmers, under the recent decisions, from getting Congress to provide for regulation of the prices the packers pay them for live stock? What is to prevent them from getting Congress to provide for regulation of the prices they have to pay for agricultural implements and automobiles, or even from getting Congress to provide for regulation of all the prices they directly and indirectly pay to large companies engaged in interstate commerce? Apparently they can get it if they exert enough political pressure; and nobody has yet questioned their political influence.

The lawyers and traffic managers of many large industries now appear regularly before the Interstate Commerce Commission to influence it to prevent the railways from charging the rates that the managers of the railways think they need. Why should not Congress now empower the Federal Trade Commission or the Interstate Commerce Commission to regulate all prices charged in interstate commerce, and the railways thereafter have their officers appear before the price-regulating tribunal to prevent other industries from charging them more for coal, iron and steel, lumber, cement and all the 70,000 kinds of commodities they buy than the managements of the railways believe they should be required to pay?

"Fair Return" for Railways and Others

The Supreme Court has held that the railways are entitled to rates that will yield a fair return upon a fair valuation. The Interstate Commerce Commission has proceeded upon the assumption that this means they should not be allowed to earn more than a fair return, and business interests are largely responsible for the kind of regulation as a result of which on the average they have earned much less. Under the same

interpretation of the Constitution other concerns and industries are entitled to have their prices so regulated as to afford them a fair return; but if the Federal Trade Commission were empowered to regulate prices it probably would follow the example of the Interstate Commerce Commission with the result that no large industry engaged in interstate commerce would be able to earn a fair return.

The experience of the railways indicates that no industry that Congress has power to regulate has any real protection from destructive regulation excepting public sentiment. The railroads have not been protected by public sentiment and, consequently during the fifteen years since the Interstate Commerce Commission held they were entitled to earn 5¾ per cent have actually earned only 3.3 per cent. This experience of the railways should be a warning to the leaders of other large industries. First, they should drastically revise their views as to how the railways should be regulated and transmit the revision to their lawyers, traffic managers and others who speak for them regarding railway regulation, for railway regulation has established too many bad precedents already for future regulation of other industries. Second, they should join with the railways in educating the public to a realization that such regulation of railways as has prevailed, if applied to all large industries, would be destructive of the welfare of all classes of the people.

Freedom or Coercion in Business?

The most vital economic issue with which the nation is confronted is whether the managements of its large industries shall be allowed a large measure of freedom or be subjected to coercion by government bureaucracy. The purpose of already prevailing and proposed new policies of federal regulation of business is re-distribution of wealth and income. This actually has been the objective of railway regulation for more than a quarter century. But something much more important than re-distribution of wealth and income is needed. This is, increase of the total national wealth and income.

According to the most recent estimate of the Brookings Institution, the national income in 1936 provided an average income per family of $1,800. William Green, president of the American Federation of Labor, recently said that every family should have an income of $3,600. No reasonable or fair person will controvert this. But assuming prices the same as in 1936, the total production of all commodities would have to be increased 100 per cent to provide an average family income of $3,600. If some families continued to have much more than $3,600 it would be necessary to increase production much more than 100 per cent to enable each to have at least $3,600. The Brookings Institution also estimates that if all the present unutilized labor force of the country were employed—presumably at present hours of work—the resulting increase of production and national income would be only 20 per cent, or to an average of only $2,200 per family. It follows that much more than complete re-employment is required to increase production enough to enable every family to have $3,600 a year.

How Provide An "Abundant Life?"

What is required, of course, is the adoption of the means necessary to cause a great increase of production *per worker*, and therefore per capita. How can this be done? Only by expansion and technological improvement of machinery and improvement in its operation. Suppose a freight train containing 50 loaded cars has five loaded cars added without any change in the number of the crew. The result is an immediate increase of 10 per cent in the output of transportation per member of the crew. Suppose that a factory, without changing the number of its employees, replaces old machinery with new with a resulting increase in its production of 10 per cent. There obviously occurs an increase of 10 per cent in the average output per employee. But suppose that the number of men in the train crew is increased without any change in the train's load, or the number of men employed in the factory is increased, because of reduction of their working hours, without any increase in its production. In each of these cases there is obviously a reduction in output per employee.

Under a regime of reasonable freedom in business management increases in output per train employee and per factory employee will occur as they have in the past. Will they occur under a regime of coercive legislation enacted by Congress and administered by bureaucracy? Probably not, because government in the regulation of business almost inevitably will be dominated by a political desire to placate organized labor rather than by economic considerations.

Can the Public Be Educated?

If we put all the employable workers in the country to work and then reduce their hours of work as rapidly as improvement occurs in the physical facilities of production and transportation there will be no increase in output per worker or in total output, no increase in national income and consequently no increase in income per worker or per family. If wages *per hour* are increased more in industry and transportation than *output per employee-hour*, either the prices and rates that will have to be paid by all will be increased or profits in industry and transportation will be reduced or wiped out. If profits are excessively reduced or wiped out industry and transportation will be left without means of making the improvements in machinery necessary to increase and improve their products and services.

Can the public be so educated regarding great economic problems that it will cause politicians to allow them to be solved in the public interest? The experience of the railways is not encouraging. But in their efforts to educate public sentiment they have constantly encountered opposing pressure and propaganda from large business interests now held by the Supreme

Court to be subject to the same kind of regulation as the railways. If all business interests unite in intelligent efforts to educate the public a large measure of freedom of business management may perhaps be maintained and the capitalistic system be allowed to operate in the public interest. If large business interests continue as in the past to seek government domination of each other regardless of the ultimate effect upon all business enterprise the outcome will be most unhappy both for business and the people.

Illumination of Grade Crossing

The illumination of railroad-highway grade crossings is being studied more intensively now than ever before as a means of reducing the number of accidents at night. Data prepared by the Interstate Commerce Commission for the first six months of 1935 show that, in the United States, 800 accidents occurred between 5 p.m. and 7:59 a.m. In 346 of these accidents highway vehicles were struck by trains, while in 454 instances the vehicles ran into the side of trains. Of the latter, 255 accidents, or 56 per cent, occurred between 10 p.m. and 2:59 a.m., these accidents resulting in the death of 47 persons, or 54 per cent of the total of 87, and the injury of 436 persons, or 61 per cent of the total of 713.

One's first thought is that these 454 drivers must have been intoxicated or imbued with a spirit of recklessness. However, a conversation with one man who narrowly escaped such an accident affords an explanation of the reason for some of these occurrences. This man stated that he was driving at average speed on an open highway about 8:30 p.m., that he was not tired or sleepy, and had not taken any intoxicating liquor. He was watching the road when suddenly he saw a dark object such a short distance ahead that he was barely able to stop a few feet short of a slow-moving freight train. Analyzing the situation, it is readily understood that the headlights of an automobile are purposely directed downward to prevent glare in the eyes of approaching drivers. Furthermore, the dull-painted surfaces of the trucks and sides of freight cars do not reflect enough light to be readily visible from any great distance. It may be concluded, therefore, that many, if not the majority, of the 454 drivers hit the trains because they could not see the cars in sufficient time to stop.

A considerable proportion of these accidents occur in the vicinity of terminals or switching areas where the movements of trains are comparatively slow. At many such crossings, the operating conditions are such that automatic signal protection is not practicable, and watchmen or manually-operated gates are not justified during any part of all of the 24-hr. period. Furthermore, such crossings are not of sufficient importance to justify separation for many years.

In view of the circumstances outlined above, it would seem entirely practicable to reduce the hazard at certain crossings by illuminating them. This has been done effectively for some years at several crossings in San Francisco, Cal., Louisville, Ky., and at scattered locations on various roads. The Niagara Junction recently installed special sodium lamps at 12 crossings, as is explained elsewhere in this issue.

The suggestion that grade crossings should be illuminated may meet with several objections of a technical and legal nature from railroads. It may be contended that the illumination of streets and highways is a function of the local governments, and that the railroads should not assume the operation and maintenance of such facilities because of the possibility that the railroad might be held liable if an accident should occur at a time when the lamps were not functioning properly. However, the railroads are now maintaining and operating a wide variety of electrical and signal apparatus so efficiently as to permit a minimum of failures.

Accidents involving serious loss of life and attendant damages are now occurring, and any measure that shows possibility of preventing a large proportion of these accidents, even if subject to infrequent failure, would pay excellent dividends financially as well as from a humanitarian standpoint. The objection as to liability could be obviated by the local government assuming the responsibility for maintaining and operating the equipment. Surely, if the result is worth while, effort should be made to overcome these technicalities in one way or another.

Thomas F. Woodlock on Continued Independence for I.C.C.

The Interstate Commerce Commission is a natural growth, responsive to natural needs that have developed since Civil War days. It was a natural growth because it followed upon the new needs. Unlike some of the later commissions, it was not born full grown. It received new powers from time to time in the light of experience, and it carved out for itself a path through unsurveyed territory with what can only be regarded as real success. The task set it by the tremendous speed of change in the things it had to deal with was simply colossal, and nothing short of a personnel composed exclusively of angels and archangels could have done it without frequent mistakes. The Commission made them, but it also built up a system of regulatory principles that experience has proved to be sound.

And, above all, it has given the nation a striking demonstration of what can be done by a governmental agency free from all taint of politics and marked by a spirit of sturdy independence and single-minded devotion to duty for which the United States Supreme Court furnishes perhaps the only parallel in our history.

Hands off both! This should be our determination.

From the Wall Street Journal

View of the New Coal Pier and Dumper from the Air, Showing the Supporting Yard in the Background

Coal Dumpers Built by N. & W. Embody Latest Improvements

Unit near Norfolk, Va., incorporates the latest features to speed up and simplify operations, wet coal, prevent degradation, and minimize delay to ships

EACH new dumper that has been built during recent years for transferring coal direct from cars to boats has incorporated new features of design and operation, and the new facility of the Norfolk & Western at Lambert Point, Va., is no exception. This dumper, which, with its attendant facilities, cost approximately $1,600,000, incorporates the latest features in design and in automatic operation and control, employs a new type of coal-sprinkling arrangement to hold down dust at both loading and unloading points, and includes two special features designed to prevent the breakage or degradation of the coal during transfer. In addition, the dumper incorporates a number of structural features of interest, designed to speed up operations and to minimize maintenance and repairs, and is supplemented by a mechanically-equipped bunkering barge, with a coaling capacity of 150 tons of coal an hour, for supplying bunker coal to ships for their own boilers, while taking on cargo coal for transport.

The new coal-handling facilities at Lambert Point, which are located approximately five miles northwest of Norfolk, Va., form an addition to the already extensive tidewater terminal of the road at this point, established in 1883. Prior to the construction of the new dumper, the road had three large coal loading piers at the terminal, all of which were of the high-level, trestle type. These piers, of large capacity, were adequate to handle the company's business, but it was in need of a modern coal dumper which could transfer coal of prepared sizes to boats with a minimum of breakage and with the greatest efficiency and economy. In addition to the existing coal-loading equipment at this terminal, the facilities include storage and classification yards with a capacity of more than 5,000 cars, and all of the necessary auxiliaries to insure the prompt delivery and transfer of ungraded coal.

The new dumper, which supplements, rather than replaces, the older facilities, and which is served by the existing yards, is of the low-level, elevating type, fully electric in operation, with a maximum capacity of 4,800 tons an hour. It will handle all sizes of open-top cars up to 120 tons capacity, and can accommodate the largest ships operating in ocean coal trade.

The dumper is located about 700 ft. from the inshore end of a newly constructed pier, 1,000 ft. long by 74 ft. wide, which extends into the Elizabeth river where it is served by a wide slip dredged to a minimum depth of 38 ft. The pier is served by two structural steel viaducts, one for carrying loads to the car dumper, and the other for returning the empty cars to the empty car yard.

The car dumper consists essentially of a structural steel car elevating tower, or tipple, 138 ft. high; a counterweighted car-hoisting cradle with an adjustable deck or platen; a car-clamping device; coal flow-retarding mechanisms of two distinct types; a tapered inclined pan, or apron, over which the coal is passed to a point directly over boats; a four-section telescoping chute, through which the coal is lowered into boats; and twin, electrically-operated, undercut gates at the base of the chute for distributing the coal quietly and uniformly within boats.

After the coal loads have been classified in the large storage yard at the terminal, they are humped into any of 23 tracks of what is termed the "barney yard." From this yard, the cars, controlled by car riders, are moved by gravity, one at a time, across automatic scales, where the riders dismount. At this position, a disappearing-

The New Dumper in Action—Note Loads Arriving at the Right, and Bunkering Barge Replenishing Bunker Supply While Cargo Coal Is Taken On

type barney engages the rear coupler of the car and pushes it up an incline on the new steel viaduct serving the coal dumper. From a crest in the elevation of this viaduct near its inshore end, where it passes over other coal-handling tracks, the car drifts down a slight incline for a distance of approximately 600 ft., where its speed is reduced automatically to six miles an hour by a remotely-controlled, electrically-operated car retarder unit. Continuing for another 300 ft. at reduced speed, the car is brought to a stop by a second electrically-operated car retarder at the foot of a rising incline leading to the cradle of the car dumper. Here, an electric motor pusher, having a retractable side arm, operating on a narrow-gage track parallel with the load track, engages the near rear corner of the loaded car and pushes it up the incline to the dumper cradle.

As a car is moved on the platen of the dumper cradle, it is slowed down and stopped in correct position for elevating and dumping by means of a third car retarder directly on the platen, controlled by the car spotter. As the cradle begins to rise, the platen shifts laterally to the dumping side of the cradle frame, where the side of the car comes in contact with steel-faced timber buffers which give it support while it is being rotated. As the car continues to rise, four automatically-adjustable clamping arms make contact with its top face and hold it tight to the rails while being dumped.

Flow Retards Minimize Breakage

Immediately beyond in the car's upward movement, the first of the coal flow retarding mechanisms comes into play. This mechanism, known as a Wellman coal hood, is essentially a series of seven pneumatically-operated gates which clamp over the top of the loaded car and prevent the abrupt drop of the coal from its high side as the car is rotated into dumping position. As arranged over the car, the hood confines the flow of coal to a narrow stream between the lower edge of the car and the lower edges of its gates, producing a sliding motion in the coal, rather than a drop, which effectively minimizes breakage of the coal particles at this point in the transfer movement.

Supplementing this mechanism to the end of preventing degradation of the coal as it moves on to the pan, is a second coal retarding mechanism, known as a Gifford coal flow retarder, which interrupts the flow of the coal over the pan and confines it to a flat uniform stream in which there is minimum movement between the individual pieces. This flow retarder, which is one of the latest refinements in coal dumper equipment, is essentially a long steel baffle plate three feet high, which extends transversely across the pan and is so mounted as to move longitudinally over the face of the pan and to rise from the pan, permitting the flow of coal from beneath its lower edge. The baffle is 40 ft. long, which is approximately three quarters of the width of the pan at the top, and is equipped with flared wings at its ends to deflect the coal towards the center of the pan.

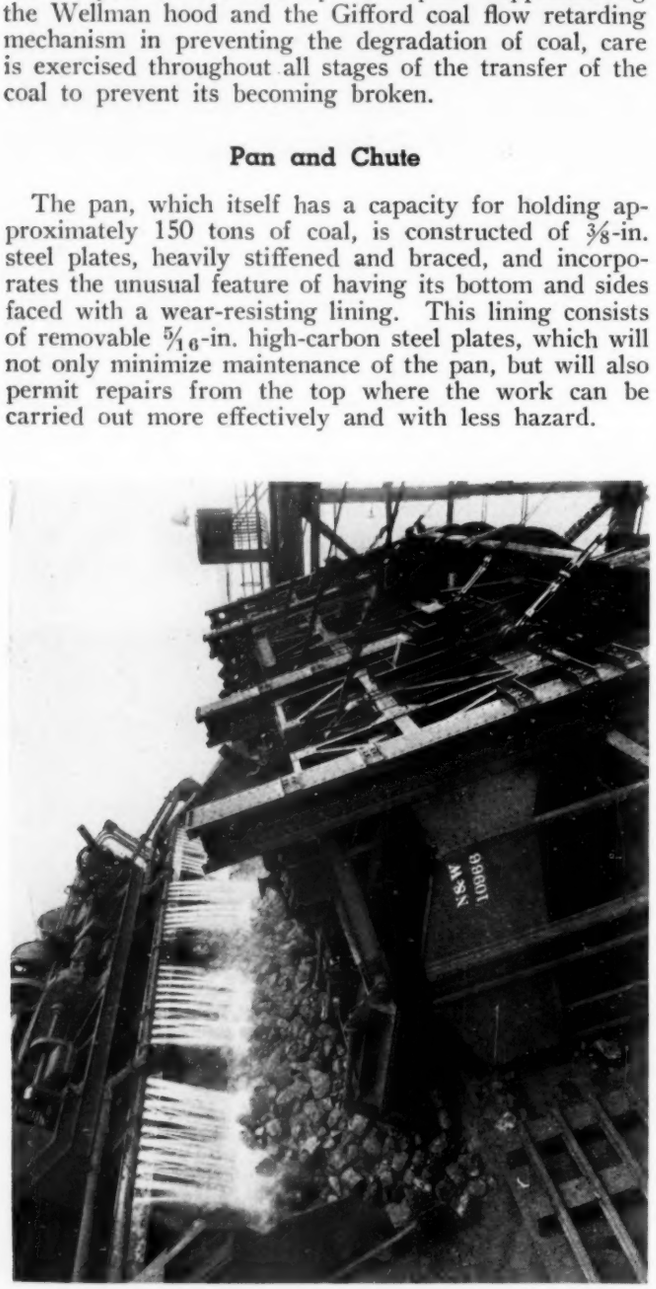
The Lower End of the Pan Extended Over a Ship, Showing the Pan Operator's Cab and the Motor-Operated, Revolving Discharge Head and Gates of the Chute—Note that Chute Has Been Telescoped to Its Shortest Length

To prevent breakage of coal striking the retarder, it is faced with a ½-in. layer of rubber chute lining applied over a cushion consisting of three layers of rubber belting.

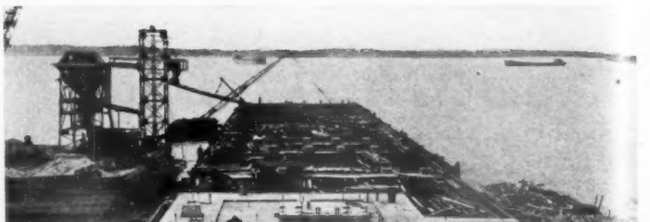
Simultaneously with the elevation of a car to dumping position, the coal retarder baffle moves upward through the pan automatically to a vertical position in the pan approximately five feet from its upper edge. As the coal flows from beneath the gates of the Wellman hood and accumulates against the retarding baffle, the baffle recedes slowly down the face of the pan through a distance of approximately six feet, at which point it swings backward at the bottom automatically, releasing the coal from beneath it. In its fully rotated position, the baffle lays practically parallel with the face of the pan, where it remains until the coal in the upper part of the pan has been drawn off or until the elevating of the next car of coal causes it to return automatically to its vertical position near the top of the pan. Supplementing the Wellman hood and the Gifford coal flow retarding mechanism in preventing the degradation of coal, care is exercised throughout all stages of the transfer of the coal to prevent its becoming broken.

Pan and Chute

The pan, which itself has a capacity for holding approximately 150 tons of coal, is constructed of ⅜-in. steel plates, heavily stiffened and braced, and incorporates the unusual feature of having its bottom and sides faced with a wear-resisting lining. This lining consists of removable 5/16-in. high-carbon steel plates, which will not only minimize maintenance of the pan, but will also permit repairs from the top where the work can be carried out more effectively and with less hazard.



As the Coal Is Released from Beneath the Gates of the Wellman Hood (Center Foreground) Its Flow Is Retarded by the Receding Baffle of the Gifford Flow Retarder. The Sprinkler System Affords Any Degree of Wetness Desired



All of the Structure Foundations, Including the Large Concrete Mass Supporting the Dumper, Are Independent of the Pier

Another feature of the pan is its high lift, which permits the dumping of cars at any elevation between 62 ft. and 90 ft. above mean low tide. Combined with this feature to permit the loading of vessels of various sizes under varying tide conditions, is the wide range possible in the slope of the pan, which extends from a position 55 deg. below the horizontal to a position 65 deg. above the horizontal, clear of the rigging of most vessels in the coal trade.

The telescopic chute of the dumper, connected directly to the lower end of the pan, has four sections, the largest of which is 48 in. in diameter. Through its telescopic feature, the chute can be elongated from a minimum length of 18 ft. to a maximum length of about 48 ft.

Another feature of the chute is its double-hinged connection to the pan, which permits a swing movement fore and aft of 30 deg., and a similar movement inshore and outshore of 60 deg. This feature combines with the effectiveness of the twin revolving undercut gates at the base of the chute to permit uniform loading of a boat with the minimum necessity for moving it during loading operations.

To meet the demand of some of the road's patrons for coal which has been wetted down, largely to prevent dust in handling at the point of consignment, an automatic coal-sprinkling arrangement has been installed at the dumper, somewhat different in design from arrangements used heretofore. It consists essentially of a slotted four-inch spray pipe, located horizontally across and just above the pan at the point of maximum upward travel of the Gifford coal flow retarder, where there is a tendency for the coal to dam up as it is discharged from cars. The slotting arrangement, which consists of 1/16-in. diagonal saw cuts approximately 8 in. long, spaced 8¼ in. center to center, produces a practically continuous shower or spray over the surface of the coal. The quantity of water discharged, which is governed by the grade of coal being handled and the desire of the shipper or consignee, is regulated by a hand-operated gate valve, while the periodic operation of the spray itself is controlled automatically by a solenoid-operated gate valve, interlocked electrically with the rotation of the cradle and the discharge of coal on the pan.

Operation of Dumper Largely Automatic

The dumper is operated entirely by electricity and is largely automatic, with many interlocked features of control to prevent accidents or damage to the equipment. As a matter of fact, after each loaded car is pushed on the cradle, all operations, from dumping, through the

spreading of the coal in boats and the return of the empty car to the yards, is controlled largely by two men, the cradle operator and the pan operator. The former is located in a small cab near the mid-height of the tower, while the pan operator is located in a cab suspended from the extreme outer end of the pan.

The cradle operator starts the return of the empty car when it has discharged its contents. When the cradle has come to full rest, he permits the approach of the next loaded car to the cradle, although this is prevented automatically through electric interlocking until the cradle is fully seated. In assuming its position on the cradle, the new load pushes off the car previously emptied. The empty car rolls down the seven per cent grade of the run-off viaduct, through a spring switch to a switchback, which reverses its movement and sends it back over the empty car return track to the empty car yard, controlled in speed by car retarders. Car riders, who mount the empty cars as they approach the yard, see that they are properly assembled into trains without damage.

The power is delivered to the pier in the form of 2300-volt, 3-phase, 60-cycle alternating current. This is converted into direct current by means of a four-unit motor-generator set located in a machinery house directly beneath the dumper, where are also housed the cradle and pan hoist motors and drums, and most of the electrical control panels and equipment. Incidentally, this house, which is enclosed with 18-gage corrugated galvanized sheet metal siding and a roof constructed of ¼-in. steel plates, is ventilated with filtered air to keep it and the equipment therein entirely free of coal dust.

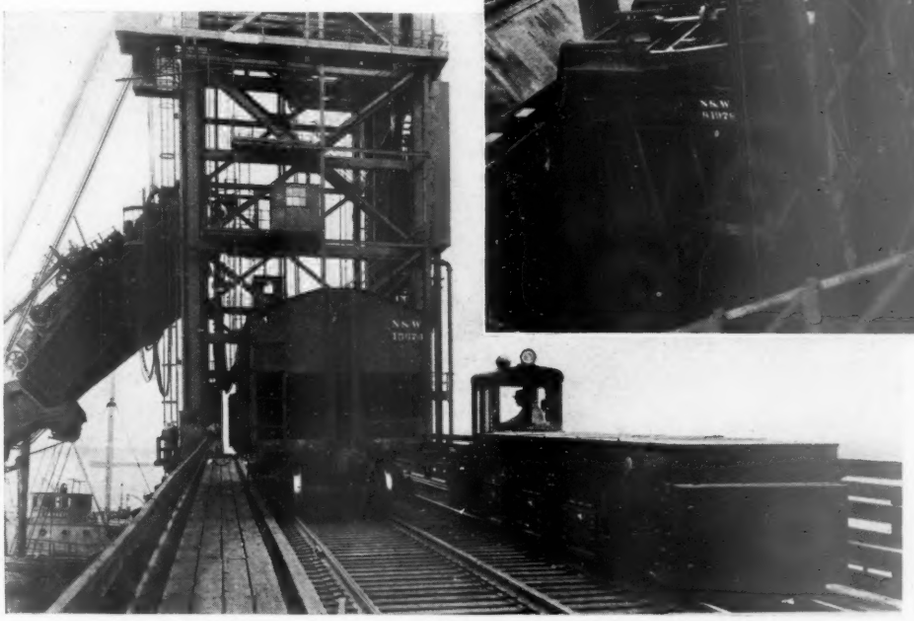
The largest motor units employed in the operation of the dumper are the two 500-hp. cradle hoist motors, which are equipped with Ward-Leonard control and Thrustor-type brakes. These motors are direct-connected to the cradle hoist drum, which is 75-in. in diameter, through a single cut-steel herringbone gear reduction.

Others of the more important motor units employed in the dumper operations include two 325-hp. barney motors, two 275-hp. pan hoist motors, two 150-hp. pan screw or elevating motors, and two 100-hp. chute hoist motors. In addition to these, at least eleven other motor units at the dumper, ranging from 33 hp. to 5 hp. capacity, are necessary to essential operations. All of the motors, other than the cradle hoist motors, have solenoid-type brakes. A special feature in connection with the operating machinery at the dumper is that all of the more important shafting employed is of nickel-alloy steel, suitably normalized and annealed.

Electrically-Operated Car Retarders Control the Speed of Movement of the Cars, Both To and Away from the Dumper

Floodlights and Communication Systems

To permit night operation at the dumper, which is as commonplace as day operation, ten 1,000-watt floodlights have been provided at strategic points about the pier and the dumper. One of the most important auxiliaries at the pier, from the standpoints of both efficient operation and safety, is the means of communication afforded, which include telautograph, the automatic telephone, and a loud-speaker system. Through these systems, all par-



Right—Looking Down on a Carload About to be Dumped—Note Hood Gates in Position on the Car. Below—An Electric Motor Car Pusher, with a Retractable Side Arm, Moves the Car into Position

ties engaged in the coal handling operations, including those on boats being loaded, can get in prompt communication with one another.

One of the newest features of the coal transfer facilities, designed to speed up the release of boats, is the bunkering barge provided. This facility, which makes it possible for a ship to replenish its bunker supply while taking on cargo coal, is an open-top barge, 35 ft. wide and 116 ft. long, which has a storage capacity of 500 tons. The loading machinery consists essentially of a power-operated bucket hoist, operated within a steel tower, which delivers to the bunkers of the ship over an adjustable steel chute. The loading capacity of the barge equipment is approximately 150 tons an hour, sufficient to handle normal bunker requirements within the period required to take on a load of cargo coal.

Extensive Foundation Work

Aside from the various operating features of the new coal-handling facilities at Lambert Point, there are certain features of the new coal pier and of the dumper and viaduct footings which are of interest from a construction standpoint. The pier is built around and is entirely independent of the car dumper foundation and of all of the footings supporting the steel viaducts carrying cars to and from the dumper. The viaduct footings consist of concrete cylinders resting upon clusters of timber piles, while the dumper foundation consists essentially of one large block of concrete, 108 ft. long by 49 ft. wide by 56 ft. deep, resting upon a group of 960 timber piles.

The viaduct footings varying in length from 24 to 45 ft., were constructed within steel shells or cylinders, varying in diameter from 10 to 13 ft. After each steel shell was set in place and driven into the river bottom sufficiently to become self-supporting, the piles were driven inside it, usually to within 8 or 10 ft. of the bottom.

When all of the piling had been driven in a cylinder, the cylinder was pumped free of mud to the original bottom level, exposing the tops of the piles for lengths of 8 to 10 ft. Following this, 2 ft. of broken stone was placed, and then, using a tremie 8 in. in diameter, a seal course of concrete was placed around the piles of sufficient depth to cover them. After this concrete had set, the cylinder was pumped dry and the upper part of the footing was poured.

Placing the huge block of concrete for the dumper footing was considerably more difficult than placing the individual, relatively small viaduct footings. Here, following the dredging of the material in the bottom over the area affected to a level of 43 ft. below mean low water, which involved the removal of approximately 528,000 cu. ft. of sand and silt, a part of the pier pile fender system was driven, and then the 960 foundation piles, 30 to 55 ft. in length, were driven, being followed down to about 31 ft. below water. Upon the completion of the pile foundation, a timber cofferdam framework was floated into place and was anchored to that part of the fender system already driven. This framework, constructed at a point approximately one-half mile from the pier, was built in three tiers. When in position, the framework was enclosed with interlocking steel sheet piling.

Following the same procedure as with the viaduct footings, all mud and silt were pumped from the cofferdam, and a seal course of concrete, 12 ft. thick was then placed continuously within its confines, about and over the pile heads. The concrete was placed by tremies, working from the four sides of the cofferdam toward the center. This method insured that the best quality of concrete would be placed in the seal about the sides of the cofferdam, and effectively prevented the formation of a laitance crust. When the seal course had been completed and had set up, the cofferdam was pumped dry, and then the upper part of the foundation was placed. Altogether, approximately 6,000 cu. yd. of concrete were required in the dumper foundation.

The new facilities at Lambert Point were planned and built under the direction of W. P. Wiltsee, chief engineer of the Norfolk & Western, with A. B. Stone, bridge engineer, in direct charge of design and construction. J. Y. Neal, resident engineer, supervised all field operations. The principal contractors and equipment manufacturers involved in the work were the Empire Construction Company, Baltimore, Md., which constructed the pier and the viaduct and dumper foundations; J. P. Pettyjohn & Co., Lynchburg, Va., which constructed the foundations for the barney incline and the land end of the viaduct; Heyl & Patterson, Inc., Pittsburgh, Pa., which furnished the car dumper and bunkering barge; the Virginia Bridge & Iron Co., Roanoke, Va., which did all of the structural steel erection; and the Westinghouse Electric & Manufacturing Co., Pittsburgh, which furnished all of the electrical operating and control equipment, with the exception of the electric car pusher, which was supplied by the General Electric Company, Schenectady, N. Y. The car retarders were furnished by the General Railway Signal Company, Rochester, N. Y.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading for the week ended April 10 totaled 716,044 cars, a decrease of 10,643 cars or 1.5 per cent below the preceding week, an increase of 94,201 cars or 15.1 per cent above the corresponding week in 1936 and an increase of 129,476 cars or 22.1 per cent above the corresponding week in 1935. All commodity classifications except live stock and ore showed decreases under the preceding week, but all commodity classifications showed increases over last year. The summary, as compiled by the Car Service Division, Association of American Railroads, follows:

Revenue Freight Car Loading

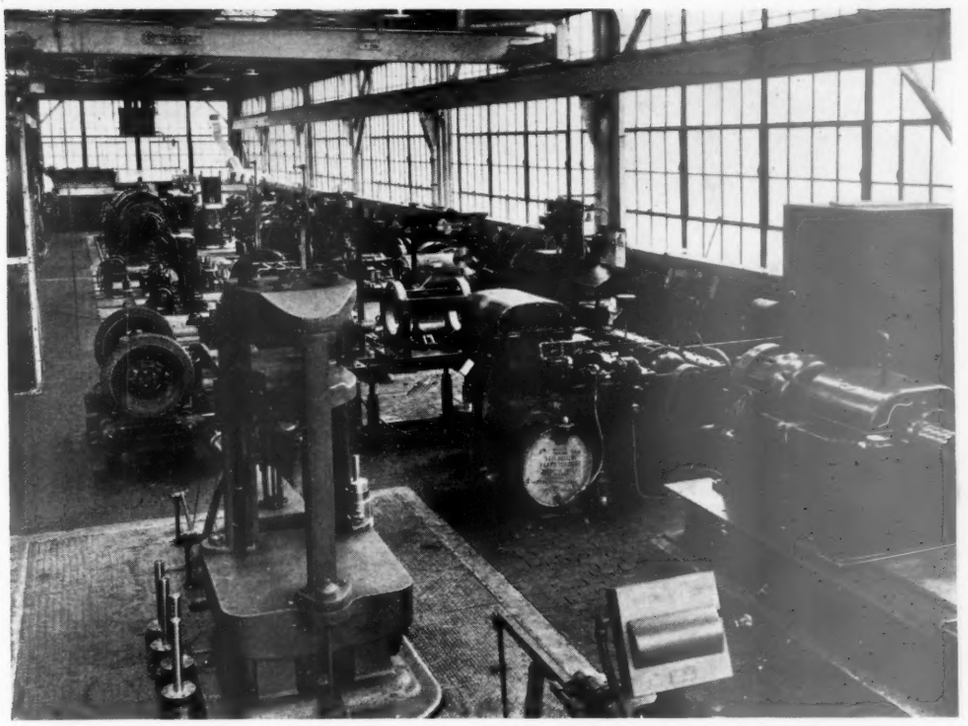
For Week Ended Saturday, April 10

Districts	1937	1936	1935
Eastern	165,160	141,398	141,103
Allegheny	157,349	125,612	116,414
Pocahontas	49,898	44,494	39,797
Southern	104,370	91,599	86,990
Northwestern	81,893	73,382	70,806
Central Western	102,144	94,140	83,699
Southwestern	55,230	51,218	47,759
Total Western Districts	239,267	218,740	202,264
Total All Roads	716,044	621,843	586,568
Commodities			
Grain and Grain Products	29,645	29,299	25,580
Live Stock	11,589	11,177	12,726
Coal	116,085	111,913	109,563
Coke	10,742	6,951	5,888
Forest Products	35,953	28,907	24,360
Ore	17,448	8,792	8,018
Merchandise L.C.L.	173,385	161,575	160,620
Miscellaneous	321,197	263,229	239,813
April 10	716,044	621,843	586,568
April 3	726,687	613,581	545,456
March 27	761,109	594,789	616,520
March 20	759,269	568,851	607,178
March 13	748,993	616,937	597,431
Cumulative Total, 15 Weeks	10,541,370	9,137,261	8,636,942

Car Loading in Canada

Car loadings in Canada for the week ended April 10 totaled 47,344, as against 50,104 for the previous week

(*Continued on page 720*)



Main Room of the Timken Axle and Bearing Research and Test Laboratory

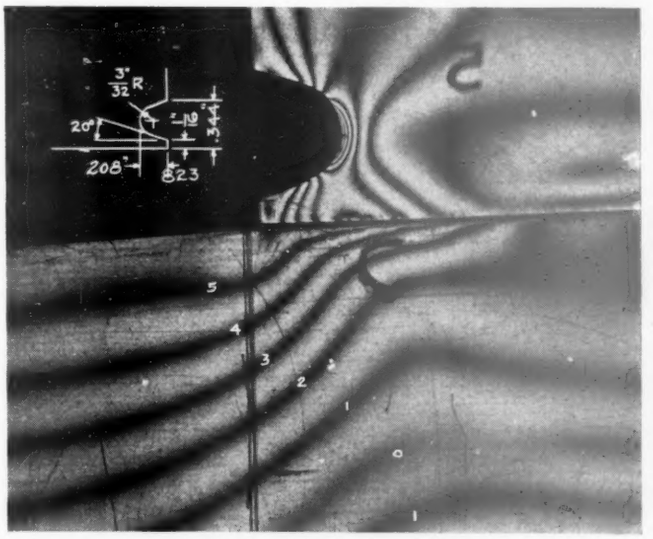
Timken's Research and Test Laboratory in New Quarters

Modern equipment installed for studying the performance of large railway bearings and axles

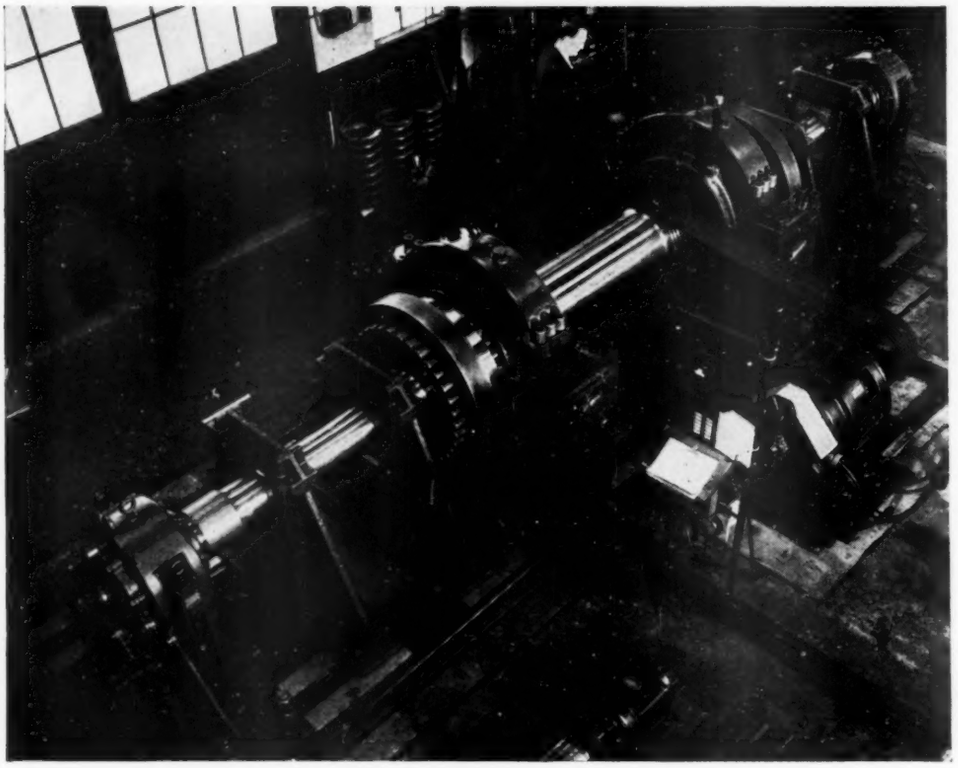
THE research and testing laboratory of the Timken Roller Bearing Company at Canton, Ohio, has recently been moved into new quarters and considerable additional equipment installed for the purpose of providing facilities for work on large axles and bearings. The laboratory is now housed in a single-story brick building 150 ft. by 80 ft., located across the street from the main office and factory.

One end of the building is occupied by a battery of eight machines designed to test bearings up to 8 in. outside diameter to destruction under radial and thrust load. These machines consist of test spindles on which are mounted four bearings. Two spindles are connected by a coupling and driven through spiral gears from a motor shaft, each shaft driving up to four sets of spindles. By changing the spiral driving gears a wide range of speeds may be secured.

Bearings are loaded in these machines by a hydraulic pressure system, oil being supplied at 1,800 lb. per sq. in. to the control system and each spindle being equipped with an adjustable relief valve. Through these valves the oil is fed to cylinders, one being located below each spindle. The cylinders and the pistons both float, transmitting the load through bell cranks on a fixed mounting to a yoke connected to the center bearings on the spindle. The load is then transmitted to the bearings at each end of the spindle. By this arrangement all bearings receive the same load. Thrust load is applied through a lever system compensated by knife-edge levers to obtain concentric loads. In the case of small bearings the thrust



Typical Example of Fringe Pattern Showing Stress Concentration In An Axle



Test Machine for Making Fatigue Tests on Full-Size Locomotive Axles Up to 14 in. Diameter

load is applied by dead weighted levers, while on the larger bearings it is applied by hydraulic pressure.

Automobile rear axles and transmissions, together with the bearings used in them, are tested in a 75-100 hp. General Electric electric dynamometer together with two hydraulic dynamometers. A speed range of 200-4,000 r.p.m. is available on the propeller shafts, which makes the equipment extremely useful for checking the oil flow characteristics of both truck and passenger car axles.

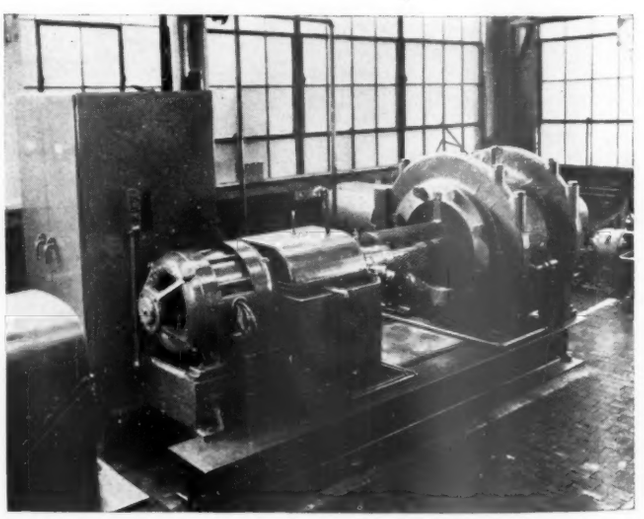
Test Machine for 24-in. Bearings

One of the most recent installations in this laboratory is a bearing testing machine which is thought to be the largest in the world. This was designed by Timken engineers to meet their special needs. In it single- or double-row bearings up to 24 in. outside diameter can be tested for fatigue under both radial and thrust load. Radial loads up to 500,000 lb. and thrust loads up to 200,000 lb. may be applied to the bearings under test by means of hydraulic rams. Provision is made for filtering and cooling the lubricant. One pump circulates the oil through a cooler and delivers it to the housing, while a second pump draws the lubricant from the housing back to the oil tank beneath the machine. Provision is made for maintaining any desired oil level in the housing. A 75-hp. two-speed motor drives the bearings through a transmission capable of speed changes from 27 to 1,000 r.p.m.

A torque device, installed between the transmission and the test spindle, indicates the power loss in driving the bearings. This device consists of a square section helical spring with sleeves attached to each end. A 45-deg. slot is cut in one end of the spring, engaging with a pin in the sleeve, so that any circumferential movement between one end of the spring and the other will be transformed into axial movement of the sleeve. This movement is registered on the scale dial through a yoke and lever, the scale being calibrated in terms of inch-pounds of torque applied to the spring. As a constant temperature can be maintained by the circulating oil system in the bearings under test, any increase in torque indicates bearing failure.

Supplementing the 24-in. radial thrust machine is a 12-in. unit which has a capacity of 150,000 lb. radial and thrust load. This unit measures torque through a cradle on which both the driving motor and transmission are mounted. The lubricant is circulated through a cooling system beneath the machine.

Two profilographs are installed in an air-conditioned room. The unit shown in one illustration is capable of 5,000 times vertical magnification, while the other is used for amplications up to 2,000 times. This equipment was originally developed for the Timken company in the research laboratories of the University of Michigan and is used for checking surface finish. A beam of light from a 108-watt projection lamp passes through a slit and lens to a small mirror mounted at an angle on one end of a bell-crank lever, the other end of the lever



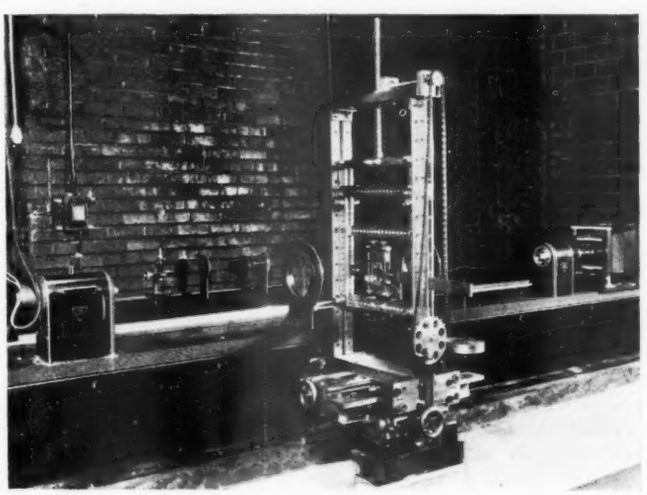
Special Bearing Test Machine Designed to Take Bearings Up to 25 in. Outside Diameter

carrying a diamond point which rests on the specimen. The specimen is mounted on a platform having rectilinear motion, this platform being connected through gearing to the recording drum. From the small mirror the beam of light is reflected to a series of three other mirrors to increase the length of the light path, the beam being finally collected in a cylindrical lens and focused to a pin point on a sheet of sensitized paper mounted on the drum shown at the back of the panel.

To check the quietness of bearings, a machine was developed which allows a bearing to be loaded with any pressure desired up to 1,000 lb. and run in a soundproofed room for testing. The machine is capable of running at constant speeds or being accelerated or decelerated as desired.

Locomotive Axle Equipment

Axle fatigue tests are made on a battery of machines which are capable of handling axles up to 2 in. in diameter. However, with the application of Timken bearings to locomotive driving axles operating at high speeds, it was thought desirable to secure basic data on full size



Photoelastic Records of Stress Distribution are Made on This Equipment

specimens. This required the design and construction of an entirely new piece of equipment. This unit is shown in one illustration. Two axles 8 ft. long and up to 14-in. diameter may be tested simultaneously, one being mounted at each end. A cantilever loading system is used, the load being applied by springs capable of 80,000 lb. load. Standard Timken railroad axle boxes are used on the load end of the shaft, while the wheel end is mounted in a central shaft. This shaft is equipped with Timken steel-mill type bearings. The main shaft is driven through an eight-strand V-belt by a 100-hp. variable speed motor, the main shaft being designed to run at a maximum speed of 1,100 r.p.m.

A large and complete set-up for photoelastic research and testing has been installed. Much valuable data as to stresses and their distribution in various design members such as fillets, notches and other design shapes for which there is no analytical solution for the calculation of stresses have already been secured on this equipment. A typical fringe pattern showing the lower stress concentration in an axle due to the relief groove in the hub pressed on the axle is shown in one illustration.

Office, darkroom and drafting facilities as well as sufficient machine tool equipment are provided in the laboratory, which is operated on a 24-hour basis, most tests being continued to destruction. Chemical and metallurgical facilities are available in the Steel and Tube Division laboratories of this company, which are used to supplement and amplify the work done in the physical testing laboratory. Much of the machine work in preparing specimens is done in the bearing-plant tool room or experimental department, thus saving laboratory time and floor space.

Future Shippers And Passengers

By William S. Wollner

IT would be the fulfillment of the public relations and traffic man's dream if every youth could be prevailed upon to make his first journey by rail. In June thirty thousand boys between the ages of twelve and eighteen years will travel from all parts of the United States to Washington, D. C., to participate in the first National Jamboree to be held in this country by the Boy Scouts of America. Many of these boys will travel in special trains on long sightseeing trips en route to and from Washington. Those from the Pacific Coast will cross the whole width of the continent and cover, in some instances, as many as eight or nine thousand miles.

The railroads have shown their appreciation of the value of this travel experience to the youth of the land by providing low fares. Having made it financially possible for this large number of boys to experience the thrill of rail travel, what other things may be done to duly impress these shippers and travelers of tomorrow with the value of the railroads as the backbone of the country's transportation system?

The boys who will participate will come from every strata of American life. They will be from the country and from the cities; wealthy, middle-class and poor homes; the sons of merchants and farmers, professional men and laborers, captains of industry and mechanics. They will truly be a cross-section of our national population. If Scouting accomplishes for them what it is planned to accomplish, they will be our most intelligent voters, our sharpest critics of business and political dishonesty, our sanest and most advanced thinkers for social justice.

What Was Done in 1935

The National Jamboree to be held in June was originally scheduled in 1935 but was at the last moment abandoned at the request of President Roosevelt, who feared that it might accentuate the infantile paralysis epidemic which then existed. Even though there was not a Jamboree, many of the scout councils sent their boys upon the journeys that had been planned for them. Trips five to eight thousand miles were not unusual. Four special trains from Central California made the transcontinental trip. The writer was in charge of one of these trains, both as the representative of the initial carrier and as the leader selected by the four scout councils whose boys it carried. The things that he observed should be of interest to officials of roads that will be called upon to handle the movements to and from Washington this year.

For trains originating on its rails, the Southern Pacific Company provided for the entire trip cars especially equipped to care for the needs of the scouts. These

were: a baggage car; a dining car; and one or two eating and recreational cars. These latter were stripped coaches with tables hinged to the car sides for their entire length, and settees. The benches were just short of the width of the car and when the car was not being used for meals, the tables were dropped against the car sides, the seats were placed crosswise and the car was used for rallies, "camp fires," etc.

A dietitian prepared menus for boys of this age-group and several weeks before the leaving date the executives of the councils were invited to inspect the equipment, to eat one of the selected meals and to decide whether they were satisfactory. With the road's supervising chef they worked out methods of serving at meal times.

So-called thirteen-section tourist sleepers were used. As the boys slept three to a section, each car comfortably accommodated a troop of thirty-three boys; the two assistant scout masters and the scout master each had a berth to himself, and the thirteenth section (the drawing room) was available as a headquarters or as an emergency hospital.

The fact that the equipment, the dining car crew, and special supplies accompanied the party on the entire trip assured good food, proper service, and meals when wanted. Even the box lunches taken upon sightseeing trips were supplied from the diner. Off-line representatives of the Southern Pacific were on hand upon the arrival of the trains in the various cities and the desire to properly service the business was at all times evident.

When plans were made for the coming trip it was taken for granted that it would originate on the Southern Pacific; certain high school football trains and other business was unquestionably the result of the service rendered in 1935.

Some Bad Mistakes

As an example of what may occur to bring about the opposite result: A road that hauled this train on a 500-mile night run did so with a freight engine. Not only was the trip a rough one but the train arrived several hours late at a city in which sightseeing and trips of great educational value had been planned. The most important part of this program had to be abandoned; the mid-day meal that could not be eaten had to be paid for. Yet there was no apology forthcoming from the road—the whole matter was apparently treated as of very little consequence. When the coming trip was planned the outspoken comment was, "We won't go over the . . . . this time!"

In contradistinction, what was recognized as a wholly human-element failure was not charged up against another road. The passenger representative assigned to the train showed poor judgment by offering liquor to the scout leaders and in other ways made himself obnoxious to both them and the boys. Apologies were immediately forthcoming from the president and other executive officials of the carrier and when this year's trip was planned this road would have again been used if the itinerary permitted.

R. E. A. Makes Good

The outstanding service was rendered by Railway Express Agency, Inc., which had no revenue interest in the party but which profited in a public relations sense in a degree that can not be estimated and will continue indefinitely. President Head of the REA is "scout minded." in addition to which he for many years had his headquarters on the Pacific Coast. When he learned of the proposed trip he offered the services of himself and his organization for the arrangement of sightseeing trips, etc.

Through his organization programs were prepared and carried out in the various cities east of the Mississippi. At each of these places the ranking traffic officer of the REA, accompanied by assistants, were on hand upon the arrival of the train and stayed with the party until it left. For the three days that the scouts were in New York the REA men lived at the hotel at which they were staying and accompanied them everywhere so that there would be no miscarrying of instructions.

REA trucks met the trains in cities where the boys went to hotels to stay and transported their baggage to and from the hotels. Thus the boys had intimate contact with REA service and the men who supervised it. At every Jamboree reunion that has been held the REA's service to Scouting has been praised and the service-with-a-smile spirit of L. O. Head and his subordinates has been spread to parents and other scouts and scouters.

The president of one of the western railroads made a point of being in the National Park that his road features in its advertising while the scouts were there and attended the various "ceremonials" that marked their visit. Employees of this road who were scout masters and committee men arranged for the train to be stopped at a beautiful lake where the boys, as their guests, were given a swim. One of the road's passenger men who is a scout commissioner was sent to the park to supervise the saddle trips and other activities.

Building for the Future

How may the 1937 migrations be taken advantage of to promote good public relations toward the roads? It is important that the boys be thought of as potential passengers and shippers of the near future and not "as just a bunch of kids." On-time performance and other service features are important but if this is all that is offered it will be taken for granted.

What is the "something more" that is needed? Frankly, the author is not prepared to say. But there are certainly many unusual things that may be done that will impress the scouts with the desire of the managements and the roads to be helpful in securing the greatest possible pleasure and profit from the trip.

It might not be out of line for higher officers to ride some of these special trains, or at least to be on hand upon their arrival at stations, to indicate their interest. Arrangement might be made for motion-pictures on the trains or elsewhere, using the roads' advertising and public relation films, together with other films of general interest. Inspections of large terminals and shops, or even placing large locomotives or unusual trains where they may be viewed by the boys, would aid in increasing their interest in railroading. Perhaps the selecting of scouters from the roads' organizations to ride the trains and become acquainted with the men and boys aboard them would do as much as anything else to bring the particular road to the attention of the passengers.

But whatever may be the means used, here is an opportunity to bring the many important features of the roads as transportation agencies to the attention of a receptive audience. This may be done at a time when its minds are not yet fogged by the political and other aspects of their regulation or control, and the many other things that are present in the minds of older persons. In a comparatively few years these boys will be voting, traveling and shipping—now may be the time to plant the seeds that will grow into a fair attitude toward the roads and an assurance that they will get that part of the traffic that properly belongs to them.

Railroad Scrap Sales Totaled $57,000,000 in 1936

Improvement in average turnover of materials also shown in an analysis of stores—First check of old rail

CONFIRMATION of the large gains in revenue obtained by the railroads from the sale of their iron and steel scrap and of the general improvement in the rate at which investments in unapplied materials are being turned over is given in an analysis which the *Railway Age* has made of railway material used and carried in 1936.

The analysis supplements statistics published in the *Railway Age* of March 13, comparing the aggregate annual inventories on each railroad as reported in general balance sheet accounts filed by the railroads with the Interstate Commerce Commission and was prepared from special reports made by over 100 Class I railroads and several switching and terminal companies to the *Railway Age*, showing the more important divisions of the annual inventories of each road and their annual consumption of materials. The figures are not to be confused with statistics of railway purchases. For comparative purposes, the reports have been segregated by regions and the figures converted to show the percentage change from the previous year and the relation of inventories to consumption. This year's figures are also enlarged, for the first time, to segregate old rail from new rail.

According to this analysis, the Class I railroads are estimated to have used $915,500,000 of materials and supplies in 1936, as compared with approximately $750,000,000 in 1935, and they obtained $57,307,000 from the sale of iron and steel scrap, as compared with approximately $36,500,000 from the same source in 1935. The materials used include secondhand and shop-manufactured materials as well as newly purchased materials, together with handling charges. The total disbursements of material in 1936 included $262,692,000 of fuel, $57,995,000 of rail, $54,834,000 of crossties and $539,875,000 of storehouse and miscellaneous supplies. The consumption of new rail was approximately $36,495,000 and the charges made for old rail were $21,500,000. Based on the best available information, the railroads used 51,500,000 crossties last year and 940,000 tons of old rail and sold 4,100,000 tons of iron and steel scrap.

Stock balances of the Class I railroads at the close of the year, totaling $307,574,000, exclusive of switching and terminal companies, included $26,137,000 of coal and fuel oil, as compared with $22,818,000 in 1935; $32,041,000 of rail, as compared with $33,739,000 in 1935; $40,542,000 of crossties, as compared with $34,275,000 in 1935; $198,856,000 of storehouse and miscellaneous supplies, as compared with $171,920,000 in 1935; and $9,936,000 of iron and steel scrap, as compared with $9,427,000 in 1935. The rail inventory included $14,183,000 of new rail and $17,041,000 of old rail.

Table I—Materials on Hand December 31, 1936, Class I Railroads—Estimated

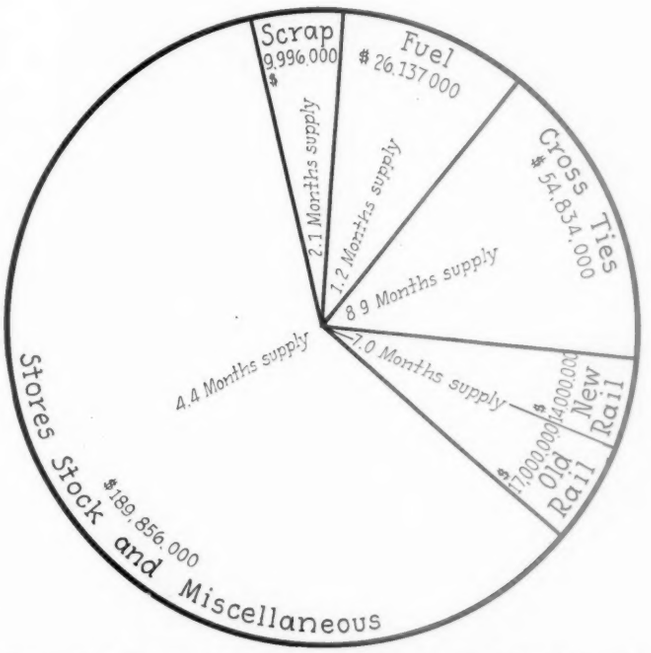
(000) Omitted

	Fuel	Days' Stock	Cross-ties	Months' Stock	Rail, New & S. H.	Months' Stock
1929	$40,000	32	$95,000	8.1	$45,000	3.9
1930	28,200	40	101,200	10.9	44,700	4.9
1931	23,600	31	86,150	11.7	49,250	8.5
1932	20,500	36	67,200	14.8	48,100	18.0
1933	17,950	37	50,950	13.0	33,600	14.0
1934	19,930	34	47,297	11.0	36,885	13.0
1935	22,218	37	42,020	9.9	34,275	11.7
1936	26,137	36	54,834	8.9	32,041	7.0

	Miscellaneous	Months' Stock	Scrap	Months' Stock	Total	Months' Stock
1929	$292,000	3.5	.....	..	$472,000	3.8
1930	246,500	3.8	$10,300	..	430,900	3.8
1931	203,869	4.4	13,200	..	374,331	4.5
1932	170,000	5.5	12,800	..	316,800	5.9
1933	178,091	5.7	10,700	..	291,291	5.8
1934	181,455	5.0	11,898	..	297,465	4.6
1935	171,920	4.7	9,427	3.1	279,926	4.3
1936	198,856	4.4	9,926	2.1	307,574	4.0

4.0 Months' Supply

Based on the average monthly consumption during 1936, fuel stocks on December 31 represented a 36 days' supply, as compared with 37 days in 1935 and 40 days in 1930. Ties on hand December 31 were equal to an 8.9 months' stock, as compared with 9.9 months in 1935, 11 months in 1934, 13 months in 1933 and 14.8 months in 1932. The stock of new and old rail represented a 7.0 months' supply, as compared with 11.7 months in 1935, 13 months in 1934, 14 months in 1933, 18 months in 1932 and 3.9 months in 1929; while the stores stock was equivalent to a 4.4 months' supply, as compared with 4.7 months in 1935 and 5.7 months in 1933. The stock



Composition of Annual Inventories and the Average Month's Supply of Each Class of Material in Stock

Table II Materials and Supplies Used and

Road	Fuel — On Hand Dec. 31	Fuel — On Hand Inc. Per Cent	Fuel — On Hand Day's Stock	Fuel — Used 1936	Fuel — Used Inc. Per Cent	Rail—New and Old — On Hand Dec. 31 New	Rail—New and Old — On Hand Dec. 31 Old	Rail—New and Old — On Hand Inc. Per Cent	Rail—New and Old — On Hand Month's Stock	Rail—New and Old — Used 1936 New	Rail—New and Old — Used 1936 Old	Rail—New and Old — Used Inc. Per Cent	Crossties — On Hand Dec. 31	Crossties — On Hand Inc. Per Cent	Crossties — On Hand Months' stock
NEW ENGLAND REGION:															
Boston & Albany	$100,984	13	16	$2,246,746	6	$32,580	$77,674	–15	20.0	$28,797	$37,159	70	$84,855	–48	13.3
Boston & Maine	219,840	–18	20	3,942,811	6	22,932	385,090	–32	12.9	138,109	240,256	225	1,247,212	–14	37.1
Central Vermont	29,045	–16	15	723,887	14	12,211	38,686	23	13.4	3,777	41,639	–31	87,346	–28	9.0
Maine Central	67,977	–18	25	972,836	7	24,369	96,297	–17	17.1	51,462	33,236	105	182,045	32	5.6
New York, New Hav. & Hart.	391,109	13	30	4,758,274	16	433,486	451,314	–31	12.9	426,864	394,060	120	377,950	–18	7.8
Total 5 Roads	$808,955	..	23	$12,644,554	..	$525,578	$1,049,061	..	13.5	$649,009	$746,350	..	$1,979,408	..	13.2
GREAT LAKES REGION:															
Ann Arbor	$30,796	–6	23	$495,324	5	$171	$12,188	–30	7.7	$72	$19,056	13	$29,144	30	5.1
Cambria & Indiana	586	191	6	34,445	11	139	4,831	169	2.5	19,431	3,739	216	5,124	76	3.2
Delaware & Hudson	538,556	14	96	2,043,120	8	61,971	52,807	50	7.8	85,428	90,924	–38	194,857	–38	5.3
Del., Lack. & Western	143,214	–42	11	4,627,379	16	10,661	86,464	–3	1.9	393,677	213,840	27	96,787	–60	3.5
Detroit & Mackinac	13,008	89	72	66,229	15	.....	12,496	–43	13.5	.....	11,072	9	36,575	43	19.7
Detroit & Toledo Shore Line	4,776	58	10	166,680	19	419	13,736	292	3.3	47,285	3,337	35	25,457	507	3.1
Erie	217,556	26	16	4,850,011	13	23,274	198,798	–42	2.3	763,103	376,280	15	544,841	–29	8.8
Grand Trunk Western	109,911	–24	19	2,093,518	15	7,423	275,616	–16	9.8	173,693	172,405	–25	158,923	256	4.2
Lehigh & Hudson River	4,968	37	13	137,447	12	16,304	2,267	–28	30.2	6,489	890	145	7,942	248	6.6
Lehigh & New England	54,197	32	65	303,572	12	20,251	44,660	–4	14.2	29,523	25,194	–20	31,525	30	14.3
Lehigh Valley	361,875	147	28	4,716,266	19	5,802	76,536	–63	3.3	40,799	236,725	62	281,731	11	24.6
Monongahela	581	–57	2	112,183	20	321	4,361	–70	1.6	12,388	21,635	–27	577	–78	1.0
Montour	856	–9	3	103,156	21	11,283	705	25	7.6	17,937	1,085	–15	1,649	89	1.4
N. Y. C. Sys. excl. B. & A.	1,393,613	–13	27	18,641,592	..	1,199,888	Not sep.	–29	3.9	3,705,360	Not sep.	..	3,285,179	15	12.4
N. Y. C. & St. L.	171,470	..	21	2,993,658	..	12,980	224,137	..	3.7	483,901	281,207	..	35,173	..	1.2
New York, Ontario & Western	61,183	–22	26	865,160	–2	57,453	Not sep.	–39	13.6	50,773	Not sep.	20	57,886	–22	11.6
Pere Marquette	222,958	..	28	2,862,232	..	10,266	71,096	..	3.5	122,436	154,081	..	443,666	..	8.3
Pittsburg & Shawmut	1,817	101	19	34,291	–1	100	15,591	–28	10.4	11,810	6,159	581	3,307	–10	1.1
Pittsburg, Shawmut & Nor.	1,379	12	8	60,978	13	268	14,750	9	.2	.....	6,274	–22	10,545	–16	3.3
Wabash	355,988	73	48	2,693,640	12	61,801	215,433	–47	4.3	661,956	102,096	119	210,583	64	3.1
Total 18 Roads	$3,687,323	..	28	$47,805,458	..	$1,500,368	$1,300,893	..	4.0	$6,606,630	$1,715,986	..	$5,445,853	..	8.7
CENTRAL EASTERN REGION:															
Akron, Canton & Youngstown	$3,861	12	13	$104,188	14	$5,883	$7,408	4	9.2	$12,681	$4,565	–94	$8,678	207	1.9
Baltimore & Ohio	341,514	21	13	9,347,847	15	102,652	130,160	–58	1.9	1,224,972	257,750	268	1,193,169	–19	7.0
Baltimore & Ohio Chi. Term'l	17,034	15	12	537,849	11	24,722	Not sep.	32	7.4	40,160	Not sep.	–36	30,093	–19	.7
Belt Ry. of Chicago	64,051	197	41	562,883	15	17,231	54,429	26	22.3	18,363	20,253	–26	66,401	38	8.2
Central R. R. of New Jersey	96,823	–4	12	2,961,501	8	150,783	50,593	62	18.9	81,349	46,298	41	124,594	–42	8.8
Chicago & Eastern Illinois	27,693	27	11	931,510	13	17,317	198,980	57	7.0	259,966	107,768	58	158,735	–6	12.4
Chicago & Illinois Midland	2,822	31	7	149,469	7	4,316	15,961	–45	11.1	650	21,187	–52	8,607	224	4.1
Chicago & Western Indiana	12,124	12	26	168,487	18	34,038	26,773	77	13.5	36,855	17,157	39	31,127	–16	7.5
Chicago, Ind. & Louisville	19,878	357	14	509,650	23	58,045	Not sep.	–6	7.4	94,420	Not sep.	405	78,686	47	10.8
Detroit, Toledo & Ironton	15,367	–5	20	282,093	1	7,585	13,659	–56	6.1	7,205	34,266	–71	102,133	16	12.9
Elgin, Joliet & Eastern	73,378	136	37	729,211	35	10,335	11,372	–41	2.9	44,218	44,955	36	35,899	–58	1.5
Illinois Terminal	8,603	..	39	81,127	..	10,171	51,271	..	14.1	96	52,191	..	64,471	..	11.9
Long Island	58,045	32	25	856,025	5	108,352	Not sep.	312	5.9	220,020	Not sep.	197	34,521	141	3.5
Pennsylvania	1,106,473	27	20	20,552,359	13	3,205,291	Not sep.	–18	10.0	3,829,434	Not sep.	83	2,875,091	8	10.8
Penna.-Read. S. S. Lines	12,666	44	11	424,668	–2	53,867	Not sep.	–20	6.5	99,920	Not sep.	10	29,050	161	8.7
Reading	436,850	11	23	4,833,333	17	276,278	207,195	–35	19.2	245,491	55,160	243	378,037	–14	17.1
Western Maryland	43,556	–26	18	854,241	10	8,974	26,831	73	2.2	140,729	54,862	51	385,222	15	12.7
Wheeling & Lake Erie	17,391	40	9	728,738	16	34,860	74,953	–49	6.1	124,209	90,302	–25	193,617	41	11.3
Total 18 Roads	$2,358,129	..	19	$44,615,179	..	$4,130,699	$869,585	..	8.2	$6,480,738	$806,714	..	$3,771,131	..	9.3
POCAHONTAS REGION:															
Chesapeake & Ohio	$267,766	..	20	$4,776,916	..	$9,507	$490,946	..	2.5	$1,589,930	$795,660	..	$481,044	..	10.2
Norfolk & Western	154,118	–5	15	3,818,784	..	98,716	252,203	–49	1.5	1,709,376	1,063,236	..	571,668	–43	7.9
Richmond, Fred. & Potomac	30,065	–39	15	747,358	16	37,404	15,923	0	7.1	69,821	20,442	124	39,027	94	4.8
Virginian	11,997	9	8	548,702	8	4,703	79,433	–2	4.9	159,738	44,311	51	145,899	–30	8.7
Total 4 Roads	$463,946	..	17	$9,891,760	..	$150,330	$838,505	..	2.2	$3,528,865	$1,923,649	..	$1,237,638	..	8.5
SOUTHERN REGION:															
Ala., Tenn. & Northern	$2,744	..	135	$74,169	..	.....	$2,014	..	8.5	.....	$2,847	..	$3,611	..	.9
Atlanta & West Point	24,791	–4	33	269,604	19	$24,073	25,352	64	23.1	$25,635	Not sep.	–17	33,856	–61	6.7
Atlanta, Birm. & Coast	42,383	–5	64	243,162	–43	40,062	Not sep.	..	7.5	64,322	Not sep.	..	38,284	39	3.6
Atlantic Coast Line	620,324	5	58	3,908,019	12	33,862	373,246	–16	9.4	226,973	290,250	27	174,202	–28	2.8
Charleston & W. Carolina	9,645	–11	20	175,760	16	1,577	21,904	–68	3.1	22,039	67,473	102	35,304	1	6.0
Clinchfield	8,599	101	11	280,873	12	12,194	21,845	–65	8.9	28,915	16,802	14	162,765	15	17.1
Columbus & Greenville	3,681	49	15	89,787	9	.....	1,513	–72	3.8	.....	4,712	2	408	–50	0.1
Florida East Coast	150,198	37	78	705,103	2	35,540	80,345	15	..	408	28,458	18	97,894	21	8.7
Georgia	54,134	8	47	418,979	22	604	8,420	–50	1.9	24	55,196	141	17,495	–17	3.8
Georgia & Florida	4,549	–59	14	115,164	15	.....	20,856	–9	14.1	.....	17,628	–49	9,654	–38	1.3
Gulf, Mobile & Northern	32,723	152	37	325,390	13	1,906	25,999	–17	1.9	165,272	8,581	8	12,493	–29	0.9
Illinois Central System	670,905	92	32	7,673,485	14	32,851	370,640	–7	5.9	420,893	392,053	15	582,287	–50	5.1
Louisville & Nashville	336,450	–7	25	4,826,561	13	668,141	525,477	25	9.0	909,593	676,192	235	1,394,577	–13	17.5
Mississippi Central	6,402	59	52	44,436	10	.....	10,145	662	38.7	.....	3,144	15	8,144	80	2.0
Mobile & Ohio	29,547	8	16	664,776	–23	65,838	25,872	7	7.8	20,304	119,580	–43	16,573	–43	0.7
Nashville, Chat. & St. Louis	175,398	36	68	937,026	14	29,696	73,856	–23	3.2	328,560	56,519	160	242,239	2	14.2
Norfolk Southern	33,342	79	45	269,665	–13	.....	120,271	61	8.2	.....	176,360	39	7,535	–76	0.5
Seaboard Air Line	421,345	–21	54	2,844,602	14	12,873	398,122	–40	5.9	448,525	392,139	8	273,981	–5	3.5
Southern	906,305	86	46	7,182,977	13	39,640	208,119	–26	2.4	715,987	496,544	11	968,597	17	4.2
Total 17 Roads	$3,457,740	..	41	$30,540,709	..	$958,795	$2,193,725	..	6.4	$3,313,128	$2,628,113	..	$4,034,080	..	5.7
NORTHWESTERN REGION:															
Butte, Anaconda & Pacific	$897	–26	28	$11,820	76	$23,179	.....	–23	..	$4,329	.....	45	$11,130	–13	10.9
Chicago & North Western	696,807	90	42	6,055,115	29	409,396	$1,094,135	58	5.4	2,028,579	$1,319,200	42	1,485,569	–5	11.4
Chicago Great Western	42,393	76	9	1,643,015	16	5,987	71,926	44	1.4	417,169	227,598	66	78,814	113	2.6
Chic., St. P., Minn. & O.	147,979	33	23	2,290,573	14	10,208	157,622	33	7.0	189,189	100,124	185	317,916	13	11.4
Chic., Milw., St. P. & Pac.	512,945	58	26	7,082,676	17	643,544	Not sep.	–3	3.7	2,095,236	Not sep.	1	2,065,329	13	7.2
Duluth, Missabe & Northern	233,094	–3	101	840,456	43	48,142	37,790	–2	16.9	18,517	42,479	288	119,066	–35	10.0
Duluth, S. Shore & Atlantic	21,109	–3	29	267,556	12	1,704	63,406	–18	31.8	.....	24,683	–34	20,611	61	3.7
Great Northern	1,288,394	7	65	7,227,010	14	511,693	Not sep.	–19	23.8	257,771	Not sep.	70	1,202,097	6	11.3
Green Bay & Western	8,272	44	17	176,541	188	1,909	6,245	–92	.5	109,445	100,881	247	24,476	3	2.1
Lake Superior & Ishpeming	87,117	31	295	107,621	21	7,449	73,433	–6	..	778	4,038	432	7,170	114	2.7
Minn., St. P. & S. S. Marie	196,225	27	33	2,196,450	9	15,414	114,120	31	7.4	113,851	95,831	–10	446,880	18	6.6
Northern Pacific	320,884	3	28	4,165,552	9	140,980	656,905	12	8.6	777,833	337,738	62	1,074,646	7	10.2
Spokane International	3,348	214	26	46,013	–16	342	22,834	–17	..	60	3,573	18	6,813	68	2.1
Spokane, Port., & Seattle	84,033	9	49	624,432	6	3,356	87,925	94	6.7	143,488	19,727	..	14,234	13	1.3
Total 13 Roads	$2,355,103	..	33	$25,507,820	..	$1,311,610	$2,386,341	..	5.4	$5,898,474	$2,276,863	..	$5,672,654	..	8.2
CENTRAL WESTERN REGION:															
Alton	$49,713	75	18	$1,025,675	26	$13,168	$63,092	–86	1.2	$444,683	$291,465	302	$78,699	6	2.1
A. T. & S. F. Lines	3,058,310	–4	80	13,850,628	20	2,311,510	Not sep.	–27	6.3	4,415,783	Not sep.	237	2,806,865	–35	10.9
Bingham & Garfield	.....	..	..	20,408	..	6,843	6,230	..	2.9	32,575	21,951	..	5,016	..	1.4
Chicago, Burl. & Quincy	492,320	20	34	5,349,042	18	493,668	Not sep.	–30	7.1	835,585	396,167	5	2,069,871	–3	11.1
Chicago, R. I. & P. Lines	316,844	–11	21	5,970,247	12	1,221,680	Not sep.	346	7.1	2,054,754	Not sep.	269	500,254	18	6.8
Colorado & Southern	35,796	–3	21	621,732	21	7,605	133,701	387	33.4	2,177	48,479	11	83,919	62	8.8
Denver & Rio Grande West.	57,621	6	11	1,846,100	40	586,569	402,760	103	19.0	304,962	318,436	141	382,901	50	7.6
Fort Worth & Denver City	156,756	5	142	403,315	3	11,509	33,977	29	..	3,299	5,050	–10	18,309	–23	3.0
Nevada Northern	3,385	–50	15	82,275	38	2,433	2,161	–20	..	941	197	–70	22,690	7	13.4
Northwestern Pacific	43,976	19	48	334,368	5	2,721	31,259	–32	19.5	5,604	15,288	39	13,350	35	6.6
Peoria & Pekin Union	16,253	430	42	141,675	16	81	7,609	–50	11.2	46	8,185	95	3,729	–47	3.5
San Diego & Ariz. Eastern	2,807	36	13	79,008	9	2,594	1,087	19	4.6	4,116	5,400	109	6,738	–72	2.1
Southern Pacific, Pac. Sys.	2,201,717	44	43	18,858,408	61	537,707	431,380	–42	3.7	1,664,328	1,483,632	75	1,078,256	1	9.7
Union Pacific System	1,156,697	22	36	11,701,098	10	2,731,833	1,126,921	65	31.0	1,157,465	334,511	–13	2,357,948	1	12.8
Utah	986	–17	8	46,137	17	2,661	22,873	–5	..	33	1,265	24	11,867	–72	3.9
Western Pacific	127,755	3	32	1,463,473	34	51,312	350,155	37	3.5	1,292,845	$2,196	66	139,997	9	4.7
Total 16 Roads	$7,720,936	..	46	$61,773,181	..	$7,983,884	$2,613,216	..	8.6	$12,219,196	$2,616,055	..	$9,580,429	..	9.9
SOUTHWESTERN REGION:															
Burlington-Rock Island	$4,174	–37	24	$62,707	–1	$1,639	$2,687	–17	..	$70	$1,041	..	$13,117	–77	6.2
Fort Smith & Western	468	1	4	40,244	18	4,724	Not sep.	4	..	2	Not sep.	..	11,033	435	3.6
Kansas City Southern	282,182	4	..	.....	..	16,467	57,148	42	..	.....	.....	..	310,887	13	...
Louisiana & Arkansas	108,307	..	136	290,182	89	1,951	101,671	113	4.5	1,168	275,720	127	135,035	–33	11.5
Louisiana, Ark. & Texas	5,463	–34	22	90,254	76	.....	25,233	10	3.6	.....	82,764	396	18,738	–30	3.0
Missouri & Arkansas	943	–47	46	7,506	–84	.....	885	–77	..	.....	.....	..	5,417	57	1.1
Missouri-Kansas-Texas	227,930	–59	41	2,046,400	15	177,630	Not sep.	–31	12.2	174,795	Not sep.	–16	404,596	–17	8.8
Missouri Pacific System	995,925	7	52	7,008,876	21	107,051	594,934	–20	4.2	1,378,740	632,388	71	1,408,180	25	6.7
Gulf Coast Lines	206,669	4	99	760,358	26	14,333	172,878	–9	14.7	111,507	41,745	6	106,402	82	15.7
International-Great Nor	409,623	38	194	769,594	17	46,611	107,673	28	15.9	88,568	27,619	29	198,619	57	6.5
St. Louis-San Francisco	225,916	19	21	3,898,177	8	537,044	Not sep.	14	8.7	740,099	Not sep.	17	909,320	–1	5.5
St. Louis Southwestern	366,859	92	127	1,056,079	33	49,985	67,153	43	12.6	92,709	18,452	139	174,014	328	6.2
Term'l R. R. Ass'n of St. L.	29,882	75	17	638,114	13	40,164	10,950	90	6.8	64,879	25,450	120	20,352	75	12.8
Texas & New Orleans	688,783	–4	99	2,526,519	12	71,447	463,652	–4	16.9	164,432	229,262	26	620,193	–62	6.7
Wichita Falls & Southern	1,219	89	18	24,714	8	.....	1,794	–86	2.4	.....	8,873	..	1,519	–34	6.9
Wichita Valley	1,676	–33	24	26,011	–7	.....	2,096	–52	9.8	.....	2,562	..	9,876	..	7.4
Total 12 Roads	$2,655,392	..	55	$17,683,563	..	$991,635	$1,268,376	..	6.9	$2,616,892	$1,267,639	..	$3,724,455	..	8.9
Total Class I Equated	$26,137,377	..	36	$262,692,294	..	$14,183,773	$17,041,859	..	6.5	$36,493,476	$21,500,851	..	$40,542,312	..	

* Purchases.

Carried by Class I Railroads in 1936

Used		Stores Stock — On Hand			Stores Stock — Used		Total—Less Scrap — On Hand			Total—Less Scrap — Used		Scrap			
1936	Inc. Per Cent	Dec. 31	Inc. Per Cent	Month's stock	1936	Inc. Per Cent	Dec. 31	Inc. Per Cent	Month's stock	1936	Inc. Per Cent	On Hand Dec. 31	Sold 1936	Total on hand Dec. 31	Road
$76,638	−44	1,104,097	−1	7.6	$1,747,961	15	$1,400,190	−7	4.1	$4,137,301	−9	$12,556	$183,769	$1,412,746	B. & A.
403,307	18	2,300,497	−14	5.3	5,219,586	16	4,175,571	−12	5.0	9,944,069	−15	16,368	177,801	4,191,939	B. & M.
116,242	−8	293,009	−3	3.8	915,660	37	460,297	−8	3.1	1,802,205	−21	5,998	85,859	466,295	C. Vt
375,393	39	883,875	5	6.0	1,754,402	14	1,254,563	7	4.7	3,187,329	15	4,420	34,754	1,258,983	Me. C.
583,562	43	3,305,907	−7	3.6	10,865,591	20	4,959,766	−12	3.5	17,028,351	23	77,166	989,705	5,036,932	N. Y. N. H. & H.
$1,555,142	..	$7,887,385	..	4.6	$20,503,200	..	$12,250,387	..	4.1	$36,099,255	..	$116,508	$1,471,888	$12,366,895	
$68,280	−15	$186,218	−1	4.9	$458,064	20	$258,517	−1	3.0	$1,040,796	10	$2,813	$18,408	$261,330	Ann Arbor
19,351	27	38,620	5	...	.....	..	49,300	18	...	.....	..	4,999	7,397	54,299	Camb. & Ind.
437,508	−5	1,305,893	2	4.8	3,234,096	0	2,154,084	0	4.4	5,891,078	0	47,267	253,884	2,201,351	D. & H.
327,296	3	1,319,912	−1	2.7	5,848,524	14	1,657,038	−14	1.7	11,410,716	15	50,954	.....	1,707,992	D. L. & W.
22,232	6	126,009	0	16.8	90,050	19	188,088	4	11.9	189,583	15	281	34,823	188,369	Det. & Mack.
33,439	−2	61,468	0	4.8	152,722	9	105,856	45	3.1	403,463	26	794	14,046	106,650	D. & T. S. L.
741,048	0	2,140,046	10	2.9	8,755,517	11	3,124,515	−4	2.4	15,485,959	11	410,384	2,376,385	3,534,899	Erie
453,465	8	973,525	−1	3.5	3,350,147	39	1,525,400	1	2.9	6,243,229	22	49,367	.....	1,574,767	G. T. W.
14,388	−4	49,319	8	6.8	87,549	16	80,800	4	3.9	246,763	14	1,474	12,579	82,274	L. & H. R.
26,531	−13	220,096	10	5.4	484,851	61	370,729	11	5.1	869,671	30	7,910	38,871	378,639	L. & N. E.
137,389	−56	1,720,492	−12	3.3	6,215,777	22	2,440,436	−5	2.6	11,346,956	19	86,808	1,072,003	2,527,244	L. V.
79,823	25	167,948	−14	7.5	267,664	0	173,107	−19	5.4	381,509	1	893	8,639	174,581	Monong.
13,807	−14	116,359	−9	5.6	250,907	42	130,852	−6	4.1	386,892	29	1,340	21,689	132,192	Montour
3,173,124	..	16,281,174	−14	4.9	39,594,888	..	22,159,845	−12	4.1	65,114,964	..	617,484	8,390,592	22,777,329	N. Y. C.
350,529	..	932,738	..	2.7	4,083,456	..	1,376,558	..	2.0	8,192,751	..	66,548	414,351	1,443,106	N. Y. C. & St. L.
59,742	−46	446,518	9	6.7	794,803	12	623,040	−5	4.2	1,770,478	1	27,974	141,675	651,014	N. Y. O. & W.
644,306	..	862,940	..	3.8	2,687,846	..	1,610,926	..	3.0	6,470,903	..	48,295	253,333	1,659,221	P. M.
34,716	−19	75,303	0	15.0	60,176	55	96,118	−6	7.8	147,152	24	2,954	98,859	99,072	P. & S.
37,822	3	73,233	5	...	.....	..	100,175	3	...	.....	..	Not sep.		100,175	P. S. & N.
816,252	2	1,388,877	33	2.9	5,635,596	35	2,232,682	18	2.7	9,909,540	28	18,911	232,092	2,251,593	Wabash
$7,433,875	..	$28,374,735	..	4.2	$82,052,635	..	$40,309,172	..	3.3	$145,614,584	..	$1,442,451	$13,389,526	$41,751,623	
$54,067	−5	$72,281	0	4.0	$216,292	−16	$98,110	3	3.0	$391,792	−43	$2,466	$11,792	$100,577	A. C. & Y.
2,056,460	34	6,748,772	31	3.3	24,397,489	18	8,516,267	14	2.7	37,284,518	22	390,673	2,038,531	8,906,940	B. & O.
50,102	4	195,537	33	2.0	1,196,771	13	240,386	31	1.6	1,824,882	10	11,323	115,206	251,709	B. & O. C. T.
96,828	20	189,911	23	7.2	317,329	14	392,022	39	4.6	1,015,656	13	34,212	44,394	426,234	Belt
169,437	20	1,128,825	13	4.1	3,320,511	19	1,551,618	8	2.8	6,578,896	14	86,640	371,190	1,638,258	C. of N. J.
153,911	−12	475,328	31	2.6	2,194,183	36	878,053	27	2.9	3,647,338	28	32,694	285,029	910,747	C. & E. I.
25,416	−19	220,696	2	5.0	532,639	−3	252,402	−2	4.1	729,361	−5	9,912	44,730	262,314	C. & I. M.
49,949	4	244,534	21	5.4	537,907	9	348,596	23	5.2	810,355	12	18,947	72,438	367,543	C. & W. I.
87,449	23	560,671	13	3.8	1,774,864	150	717,280	17	3.5	2,466,383	103	61,813	303,720	779,093	C. I. & L.
95,161	−21	271,676	−2	4.1	793,383	8	410,420	−5	4.1	1,212,108	2	1,810	48,181	412,230	D. T. & I.
280,408	27	852,524	55	4.4	1,997,229	30	983,508	40	3.8	3,096,021	31	37,267	288,334	1,020,775	E. J. & E.
64,970	..	297,259	..	6.8	527,769	..	431,775	..	7.1	726,153	..	8,058	56,903	439,833	Ill. Term.
116,932	9	818,156	8	2.9	3,369,092	28	1,019,074	21	2.7	4,562,069	26	10,917	61,953	1,029,991	Long Island
3,205,048	36	24,016,424	34	3.7	77,830,720	50	31,203,279	23	3.5	105,417,761	41	1,743,329	7,448,239	32,946,608	Penna.
39,927	144	92,315	44	4.3	258,268	−9	187,898	24	2.7	822,783	0	6,667	24,633	194,565	P.-R. S. S.
264,681	21	3,430,230	−1	8.1	5,067,215	23	4,728,590	−6	5.4	10,465,880	23	96,625	743,341	4,825,215	Reading
363,109	−1	961,672	5	5.9	1,950,323	8	1,426,255	7	5.1	3,363,264	9	81,995	339,708	1,508,250	W. Md.
282,270	14	651,969	−6	2.5	3,102,339	16	972,790	−9	2.7	4,327,858	11	5,609	236,253	978,399	W. & L. E.
$7,456,125	..	$41,228,780	..	3.8	$129,384,323	..	$54,358,324	..	3.4	$188,743,079	..	$2,640,957	$12,534,575	$56,999,281	
$567,227	..	$2,329,159	..	2.4	$11,713,036	..	$3,578,422	..	2.2	$19,442,769	..	$119,995	$2,000,123	$3,698,417	C. & O.
871,392	..	4,100,718	0	3.6	13,651,104	..	5,177,423	−14	2.9	21,113,892	..	172,942	987,600	5,350,365	N. & W.
97,988	5	552,779	−14	5.3	1,241,913	53	675,198	−12	3.7	2,177,522	37	Not sep.	Not sep.	675,198	R. F. & P.
201,885	30	1,434,626	19	6.4	2,703,571*	..	1,676,658	11	6.2	3,252,981*	..	8,554	.....	1,685,212	Va.
$1,738,492	..	$8,417,282	..	3.4	$29,309,624	..	$11,107,701	..	2.9	$45,987,164	..	.....	.....	$11,409,192	
$50,455	..	$28,674	..	3.9	$88,536	..	$37,043	..	2.1	$216,006	..	.....	.....	$37,043	A. T. & N.
60,952	−7	114,499	−28	13.9	98,550	..	222,571	−27	5.9	454,741	..	$13,985	$19,940	236,556	A. & W. P.
126,017	43	228,329	−4	...	.....	..	349,058	13	...	.....	..	7,146	22,954	356,204	A. B. & C.
738,516	−9	1,596,431	12	3.6	5,283,738	29	2,798,065	2	3.2	10,447,496	18	36,660	1,067,696	2,834,725	A. C. L.
69,934	0	76,309	0	4.8	191,138	10	144,759	−26	3.3	526,344	19	7,732	21,771	152,471	C. & W. C.
113,912	4	213,641	−8	4.1	617,376	38	419,044	−12	4.7	1,057,878	25	8,767	220,835	427,811	Clinch.
40,777	11	112,891	7	6.5	208,600	27	118,492	4	4.1	343,876	19	3,301	7,912	121,794	Col. & Green.
134,170	−7	1,076,415	−2	12.6	1,019,204	9	1,440,392	4	9.2	1,887,338	5	26,881	39,899	1,467,273	F. E. C.
55,791	−6	87,445	−74	19.5	53,670	..	168,098	−60	3.4	583,660	..	4,175	55,466	172,273	Ga.
87,456	23	72,581	−1	6.3	138,000	6	107,640	−13	3.6	358,248	7	3,617	8,544	111,257	Ga. & Fla.
173,068	2	371,472	9	7.6	583,483	20	444,593	9	4.2	1,255,794	17	8,885	61,450	453,478	G. M. & N.
1,348,655	14	5,034,036	15	4.5	13,421,342	22	6,690,719	6	3.4	23,256,428	19	532,813	2,050,467	7,223,532	I. C.
954,178	2	5,216,901	7	5.1	12,231,041	95	8,141,546	4	5.0	19,597,565	64	286,243	1,040,657	8,427,789	L. & N.
49,692	87	46,505	−2	7.8	71,256	1	71,196	24	5.1	168,528	20	1,743	10,836	72,939	Miss. Cent.
293,736	1	642,729	15	5.0	1,525,104	15	780,559	12	3.6	2,623,500	−8	125,046	130,656	905,605	M. & O.
293,803	−14	1,068,384	23	7.7	1,670,219	19	1,589,573	16	5.9	3,196,127	22	Not sep.	Not sep.	1,589,573	N. C. & St. L.
162,218	−24	284,013	196	...	.....	..	445,161	102	8.8	.....	..	9,081	1,573	454,242	Norf. Sou.
1,028,203	1	2,352,459	38	4.9	5,710,834	25	3,458,781	8	4.0	10,424,305	17	60,565	289,835	3,519,546	S. A. L.
2,735,498	5	4,215,223	17	3.6	14,103,538	42	6,337,884	21	3.0	25,234,544	26	341,247	1,822,585	6,679,131	Southern
$8,138,796	..	$22,326,595	..	4.7	$57,015,629	..	$32,970,935	..	3.9	$101,532,377	..	$1,461,660	$6,891,443	$34,432,596	
$12,200	24	$161,567	−5	10.7	$181,613	−56	$196,772	−8	11.2	$209,963	−51	$1,907	$13,657	$198,678	B. A. & P.
1,559,384	14	5,294,747	30	2.6	14,028,983	23	8,980,654	29	4.3	24,991,261	26	203,682	1,536,686	9,184,336	C. & N. W.
355,604	13	403,739	39	2.8	1,738,422	30	602,859	49	3.6	4,381,808	22	21,666	163,480	624,525	C. G. W.
334,615	19	612,588	9	3.7	1,998,454	33	1,246,313	15	3.0	4,912,955	26	11,184	152,944	1,257,497	C. St. P. M. & O.
3,432,156	−16	5,835,912	8	4.6	15,347,208	19	9,057,730	10	3.9	27,957,276	11	270,088	994,380	9,327,818	C. M. St. P. & P.
143,405	60	468,296	20	3.4	1,654,496	42	906,388	1	4.0	2,699,344	45	27,942	111,821	934,330	D. M. & N.
67,315	25	173,499	0	10.7	194,318	−34	280,329	−2	6.1	553,872	−11	4,261	74,392	284,590	D. S. S. & A.
1,278,139	12	4,742,986	22	...	.....	..	7,745,170	13	...	.....	..	Not sep.	Not sep.	7,745,170	G. N.
139,887	59	46,887	73	5.6	99,917	90	87,789	−72	1.7	627,671	139	686	33,103	110,446	G. B. & W.
31,926	3	174,292	10	13.0	160,368	38	349,461	11	13.8	304,731	29	2,163	22,809	351,624	L. S. & I.
814,042	9	1,189,221	2	7.1	2,021,675	2	1,961,860	9	4.5	5,241,849	5	45,432	164,021	2,007,292	Soo
1,254,614	35	4,391,083	15	4.6	11,322,280	25	6,584,498	13	4.4	17,858,017	23	399,808	286,563	6,984,306	N. P.
30,833	27	35,982	−16	6.2	69,423	66	69,319	−9	5.5	149,901	22	2,092	2,019	71,411	Spokane Int.
133,626	59	341,484	10	7.6	537,870	−18	531,032	19	4.3	1,459,143	9	20,289	41,495	551,321	S. P. & S.
$8,309,607	..	$19,151,266	..	4.6	$49,355,026	..	$30,876,974	..	4.0	$91,347,791	..	$1,011,200	$3,697,370	$31,888,174	
$455,698	8	$415,911	−25	1.3	$3,953,571	19	620,583	−40	1.2	6,171,090	30	867	249,219	621,450	Alton
3,080,656	29	8,604,988	39	3.6	22,560,466	20	16,781,673	0	4.6	43,907,533	29	50,841	1,506,073	16,832,514	A. T. & S. F.
44,545	..	39,561	..	9.3	51,292	..	57,650	..	4.2	166,548	..	2,377	4,223	60,027	Bing. & Gar.
2,237,903	16	5,258,879	38	3.5	17,870,890	33	8,314,738	18	3.7	26,688,687	27	618,558	1,434,600	8,933,296	C. B. & Q.
954,165	13	4,823,183	29	5.4	10,747,405	21	6,861,961	43	4.0	19,726,571	26	172,689	1,621,980	7,034,650	C. R. I. & P.
114,190	−11	227,988	46	3.4	803,071	18	489,009	79	3.7	1,589,649	17	42,792	58,470	531,801	C. & S.
605,720	19	2,566,267	43	5.5	5,621,113	33	3,996,127	54	5.5	8,696,331	38	26,715	429,901	4,022,842	D. & R. G. W.
72,851	47	379,771	19	6.8	665,410	13	600,322	14	6.2	1,149,925	10	12,201	91,997	612,523	Ft. W. & D. C.
20,265	−2	63,868	4	12.0	63,606	11	94,537	−1	7.3	167,284	18	384	1,102	94,921	Nev. Nor.
24,096	0	89,078	4	2.8	383,400	40	180,384	−2	2.8	762,756	20	2,113	50,028	183,497	N. W. Pac.
12,769	−12	83,204	−20	2.9	344,393	2	110,896	−14	2.6	507,068	6	6,016	6,934	116,912	P. & P. U.
37,884	31	41,363	8	8.3	71,832	−1	54,589	−19	3.3	198,240	11	1,291	.....	55,880	S. D. & A. E.
1,322,292	32	5,832,773	40	3.5	19,929,168	27	10,081,833	20	2.8	43,257,828	43	443,102	2,381,256	10,524,935	S. P. Pac. Sys.
2,215,650	2	14,048,764	27	7.7	21,744,043	25	21,422,153	29	6.9	37,152,767	16	216,736	661,115	21,638,889	U. P.
36,446	−1	134,917	8	21.3	75,954	13	173,306	−11	13.0	159,835	11	447	5,604	173,753	Utah
355,549	19	1,495,237	30	14.0	1,281,902	30	2,164,456	27	5.8	4,475,965	39	33,645	225,490	2,198,101	W. P.
$11,589,777	..	$44,105,752	..	5.0	$106,167,516	..	$72,004,217	..	4.4	$194,778,077	..	$1,630,774	$8,727,992	$73,634,991	
$43,490	−24	$19,494	−50	4.0	$58,472	49	$41,111	−62	3.0	165,780	54	555	3,810	41,666	B.-R. I.
36,342	34	156,713	2	39.6	47,495	−16	172,938	7	16.7	124,083	5	91	1,187	173,029	Ft. S. & W.
.....	..	569,011	19	...	.....	..	1,235,695	15	...	.....	..	25,709	.....	1,261,404	K. C. S.
140,173	26	411,421	20	7.2	687,130	24	758,385	8	6.5	1,394,373	48	5,618	109,316	764,003	L. & A.
74,442	46	130,726	35	18.2	85,799	27	180,160	16	6.5	333,259	79	125	1,413	180,285	L. A. & T.
57,885	60	49,110	13	10.1	58,206	−33	56,355	7	5.5	123,597	−32	.....	.....	56,355	M. & A.
548,696	−14	1,372,454	−4	3.9	4,211,662	10	2,182,619	−20	3.8	6,981,551	8	Not sep.	Not sep.	2,182,619	M.-K.-T.
2,516,808	7	6,556,730	10	4.6	16,852,116	15	9,662,820	7	4.1	28,388,928	19	331,987	1,488,696	9,994,807	M. P. Sys.
191,505	38	560;272	18	3.7	1,808,325	20	1,060,554	13	4.4	2,913,440	22	30,698	106,060	1,091,252	G. C. L.
152,064	−5	1,046,494	17	6.0	2,069,353	10	1,809,020	26	6.9	3,107,194	12	28,499	19,416	1,837,519	I.-G. N.
1,687,160	−9	2,523,562	−3	3.6	8,481,214	22	4,195,842	0	3.4	14,806,650	13	34,522	Not sep.	4,230,364	St. L.-S. F.
376,253	144	812,179	23	3.7	2,622,844	86	1,470,990	51	4.2	4,166,337	73	Not sep.	Not sep.	1,470,990	St. L. S. W.
39,534	61	296,945*	2	4.2	845,170	−1	398,294	14	2.9	1,613,148	9	14,680	6,373	412,974	T. of St. L.
579,467	87	2,104,879	3	3.5	7,119,280	35	3,948,954	7	4.5	10,618,960	30	131,850	358,934	4,080,804	T. & N. O.
37,371	55	18,983	194	...	.....	..	23,516	−10	...	.....	..	477	1,884	23,993	W. F. & S.
17,249	−3	13,139	−20	4.4	35,356	−26	26,787	−30	4.0	81,178	−14	428	2,677	27,215	W. V.
$6,059,614	..	$14,399,042	..	4.2	$41,046,538	..	$23,038,900	..	4.0	$68,674,248	..	$519,856	$1,979,605	$23,558,756	
$54,834,330	..	$198,856,694	..	4.4	$539,873,309	..	$297,578,242	..	3.9	$915,394,254	..	$9,996,278	$57,307,054	$307,574,520	

of all materials and supplies on December 31, including scrap, represented a 4.0 months' supply, as compared with 4.3 months in 1935, 4.6 months in 1934 and 5.9 months in 1932.

The annual inventory of fuel, crossties, rail and stores stock reflected larger accumulations of material in all instances than in 1935, but in consequence of the larger proportionate increase in the use of materials, the inventories of each class of material were smaller in relation to the amount of material used in 1936 than they were in 1935 and for several years previous. The rate of stock turnover is not yet as large, however, as in 1929 when fuel stocks represented a 32 days' supply, crosstie stocks an 8.1 months' supply; rail stocks a 3.9 months' supply and store stocks a 3.5 months' supply.

The inventories and annual consumption of materials of different roads are detailed in a table. The inventory and consumption figures are those reported by the railroads. The per cent increase or decrease in the inventories and consumption were determined by comparing the figures reported for 1936 with those reported for 1935. The turnover figures were calculated by dividing the consumption for the year by 12, to obtain a theoretical average monthly consumption, and dividing the result into the stock balance. In computing the figures, it is recognized that comparisons between inventories of different railroads are open to objections. Accounting practices are not wholly uniform throughout the country because of differences in the manner of interpreting accounting rules of the I. C. C. Both inventory and consumption figures are also influenced by differences in the practice of valuing secondhand and reclaimed materials, and there are also differences in the practice of charging material out of stock when issued and in the relative amounts of obsolete, retired and otherwise unserviceable material included in stock balances. These irregularities impair but do not destroy the value of comparative studies. In the present analysis, such comparisons are facilitated by separating those classes of material which are governed by different policies and conditions or which are controlled by different departments. Uniformity has also been promoted by requesting that inventory figures should include all undisbursed materials, including ties at treating plants, and that all materials reported as used should be restricted to the value of materials issued to closed accounts. In practically all cases, the inventory totals reported by each road correspond to their general balance sheet account, No. 716.

Fuel reported on hand at the close of 1936 showed increases over the previous annual inventory on 34 roads and reductions on 16 roads, according to the analysis, and the consumption of fuel during 1936 was larger on 93 railroads and lower on 10 roads. Stocks of new and old rail were larger on 40 roads and smaller on 61 roads, and the consumption during 1936 was larger on 73 roads and lower on 22 roads. Crosstie stocks showed increases on 49 roads and decreases on 47 roads, and the consumption of crossties in 1936 showed increases on 69 roads and reductions on 31 roads. Storehouse inventories reflected increases on 68 roads and reductions on 29 roads, and the consumption of storehouse materials reflected increases on 81 roads and reductions on 8 roads.

Turnover figures are included in the analysis largely because of their popularity as a basis for making comparisons. It should be noted, however, that such figures alone are far from satisfactory with such material as rail and ties which are not consumed uniformly during

Table III—Approximate Quantities of Material Used by Various Railroads—1936

	Fuel		Rail			
	Coal (tons)	Oil (gal.)	New (tons)	Old (tons)	Crossties (number)	Scrap (tons)
New England Region:						
Boston & Albany.	508,808	.....	781	1,776	71,164	9,860
Boston & Maine..	888,812	.....	3,398	9,555	291,173	18,791
Central Vermont..	145,759	98,692	98	1,573	76,817	5,018
Maine Central ..	207,212	.....	1,176	1,607	322,115	4,053
N. Y. N. H. & H.	1,079,719	18,329,000	1,072	15,758	422,741	54,781
Great Lakes Region:						
Cambria & Ind...	17,927	.....	771	207	20,081	628
D. L. & W.....	1,448,513	595,358	10,396	9,720	317,763	50,748
Detr. & Mack.....	16,114	.....	.....	516	38,888	2,874
D. & T. S. L....	46,983	7,185	1,194	145	19,578	799
Erie	1,962,489	254,201	19,522	13,511	527,978	156,925
G. T. W.....	605,899	1,606,445	4,547	7,107	326,205	27,891
L. & N. E.....	90,928	18,267	722	899	19,053	.....
Lehigh Valley....	1,439,015	1,021,649	1,122	9,351	89,732	69,543
Monongahela	67,332	8,017	326	813	44,982	1,218
Montour	54,209	25,848	488	48	7,644	1,985
N. Y. C. & St. L.	941,665	264,851	12,463	11,297	246,798	22,541
N. Y. O. & W....	265,636	.....	1,976	....	46,277	18,594
P. M.	759,902	334,869	3,130	6,073	433,777	.....
P. & S.....	18,889	.....	524	281	36,970	9,348
P. S. & N.....	31,816	.....	.....	387	41,607	.....
Central Eastern Region:						
A. C. & Y.....	34,867	1,940	328	198	42,330	983
B. & O.....	5,128,595	3,198,363	34,027	25,775	1,286,694	145,609
B. & O. C. T....	149,719	.....	1,360	....	30,341	10,097
Cent. of N. J.....	957,344	575,152	1,881	1,867	103,949	31,815
C. & E. I.....	487,112	155,355	6,710	7,575	147,811	19,596
C. & I. M.....	87,806	53,286	16	647	17,117	2,165
D. T. & I.....	103,620	8,373	184	2,277	84,955	4,536
E. J. & E.....	393,010	243,572	1,142	1,955	198,191	17,893
Ill. Term.	42,888	24,435	3	2,661	65,519	3,699
Reading	1,521,192	899,798	.....	.....	.....	.....
Western Md.....	450,722	39,468	3,691	2,440	277,100	22,302
W. & L. E.....	358,570	260,517	3,170	3,564	210,368	19,358
Pocahontas Region:						
C. & O.....	2,468,751	244,276	40,349	31,826	489,608	126,679
R. F. & P.....	193,624	.....	1,763	1,205	107,561	.....
Virginian	380,393	.....	4,263	1,772	188,433	.....
Southern Region:						
Ala. Tenn. & Nor.	26,968	.....	.....	111	82,127	.....
A. & W. P.....	83,820	78,047	615	....	49,346	2,283
A. B. & C.....	116,072	.....	1,822	....	153,079	1,897
Clinchfield	160,499	.....	727	768	123,369	19,824
C. & G.....	33,402	54,059	.....	237	43,615	558
F. E. C.....	.....	716,529	8	1,274	183,359	5,614
Southern Region (Continued):						
Georgia	116,940	105,179	1	2,895	53,163	8,039
G. M. & N.....	131,087	647,792	3,638	801	222,466	5,528
Ill. Cent.	3,746,170	3,997,019	.....	....	1,532,926	160,427
L. & N.....	2,670,420	.....	24,370	31,078	782,561	.....
M. C. & St. L....	424,035	.....	8,624	2,856	187,038	.....
Norfolk Sou.	76,073	92,831	.....	8,910	280,552	.....
S. A. L.....	994,543	611,382	10,448	14,444	1,270,530	42,681
Southern	3,849,982	.....	18,685	26,167	2,553,350	101,148
Northwestern Region:						
B. A. & P.....	1,803	.....	209	....	23,933	1,772
C. & N. W.....	2,957,345	36,293,113	53,115	43,630	1,770,277	.....
C. St. P. M. & O.	533,428	1,520,644	4,837	3,228	375,841	19,118
C. G. W.....	636,975	299,354	11,275	10,345	289,109	11,705
D. M. & N.....	191,522	274,623	402	1,993	104,664	7,244
D. S. S. & A.....	60,751	.....	.....	1,245	118,975	6,516
G. N.	1,428,270	116,572,974	9,911	....	1,179,814	.....
G. B. & W.....	41,178	.....	3,548	12,343	165,311	6,620
L. S. & I.....	23,141	1,583	25	172	55,257	6,035
Soo	642,721	.....	3,012	4,792	899,043	13,682
N. P.	2,005,932	7,699,410	20,529	15,449	1,222,320	.....
Spokane Int.	10,982	.....	6	116	68,874	325
S. P. & S.....	.....	26,518,403	2,960	769	187,071	1,998
Central Western Region:						
Alton	479,313	479,394	11,893	16,791	384,562	.....
A. T. & S. F.....	3,400,723	.....	149,048	....	2,723,261	.....
Bing. & Gar.....	6,890	202	638	860	19,690	552
C. B. & Q.....	2,948,954	31,509,882	22,623	18,247	1,901,962	.....
Colo. & Sou.....	215,604	2,751,025	53	1,943	144,876	2,302
D. & R. G. W....	923,000	.....	8,185	12,802	710,016	33,156
Ft. W. & D. C...	9,563	24,863,042	70	169	78,416	5,002
P. & P. U.....	58,778	71,713	1	409	8,638	707
U. P.	3,796,072	153,850,872	27,084	20,398	2,155,947	69,870
Utah	32,206	1,586	1	60	23,087	36
Western Pac.	103,695	52,229,944	30,885	2,646	542,050	18,987
Southwestern Region:						
Bur.-R. I.	.....	3,131,993	2	35	54,407	4,267
Ft. S. & W.....	16,134	.....	.....	....	.....	.....
La. & Ark.....	571	17,815,451	29	12,326	194,033	7,411
La. Ark. & Tex...	.....	5,470,758	.....	4,481	114,995	1,413
Mo. & Ark.....	24,241	.....	.....	....	145,998	.....
G. C. L.....	.....	44,282,402	2,720	1,670	174,571	6,001
I.-G. N.	2,741	52,882,564	2,222	1,115	155,022	.....
St. L. S. W.....	43,428	61,112,536	2,093	1,845	367,818	.....
Term'l of St. L...	280,129	52,118	1,383	1,018	27,346	1,062
T. & N. O.....	4,314	834,184	4,021	9,158	714,476	.....
W. F. & S.....	.....	1,513,470	.....	322	42,408	390
Wichita Val.	.....	2,035,269	.....	85	24,260	305

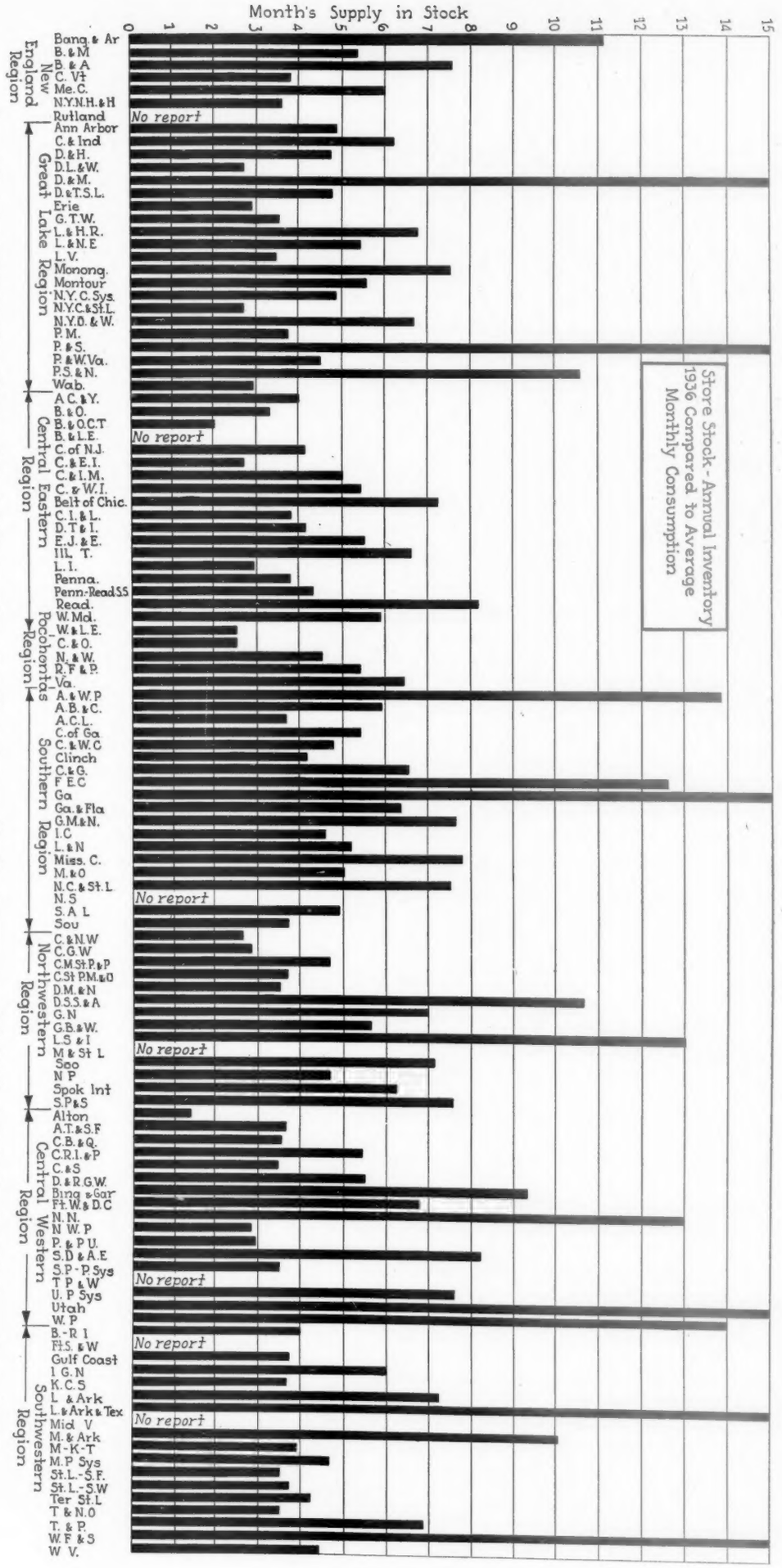
the year and which might be used very rapidly during normal track improvement programs. The wide variations between the rate of turnover of stores stock on different roads during last year also shows that they can result in misleading comparisons unless studied in the light of other information. The regional averages are less likely to be misleading.

Fuel stocks represented a 17 days' supply in the Pocahontas region, as compared with 41 days in the Southern region and 55 days in the Southwestern region. Stocks in the Southwestern region and also in the Central Western region reflected large accumulations of fuel oil. The highest regional average turnover of rails was obtained in the Pocahontas region which had only a 2.2 months' stock on December 31. The corresponding averages were 13.5 months in the New England region, 4.0 months in the Great Lakes region, 6.4 months in the Southern region, 5.4 months in the Northwestern region, 8.6 months in the Central Western region and 6.5 months' supply in the Southwestern region.

The average regional turnover of crossties was highest in the Southern region where the inventory on December 31 represented a 5.7 months' supply, based on the average consumption during the 12 months of 1936, while the crosstie inventory in the New England region reflected a 15.2 months' supply. These figures are compared with an 8.7 months' stock of crossties in the Great Lakes region, 9.3 months in the Central Eastern region, 8.5 months in the Pocahontas region, 8.2 months in the Northwestern region, 9.9 months in the Central Western region and 7.4 months' supply in the Southwestern region.

Inventories of stores stock reflected a 3.4 months' stock in the Pocahontas region, as compared with 4.6 months in the New England region, 4.2 months in the

Annual Turnover Chart Based on Relation of Stock Balances of Dec. 31, 1936, to Average Monthly Consumption—Excludes Fuel, Rail, Crossties and Scrap Iron and Steel



Great Lakes region, 3.8 months in the Central Eastern region, 4.7 months in the Southern region, 4.6 months in the Northwestern region, and 6.0 months in the Central Western region.

Iron and steel scrap on hand at the close of 1936 represented less than 3 per cent of the total inventory, and when compared to sales, the combined inventory represented a turnover of scrap six times a year.

Aggregate crosstie stock on December 31, including ties at treating plants and unapplied ties on line of road, were equivalent to $240 per mile of road; and the combined book value of rail on hand, including both new and old rail, was equivalent to $225 per mile of road. For further comparisons with previous years, reference is made to the *Railway Age* of April 18, 1936.

Traffic Clubs Hold Meeting at New York

THE semi-annual convention of the Associated Traffic Clubs of America was held at the Commodore Hotel, New York, April 20 and 21. Formal addresses were presented at the sessions by Ralph Budd, president of the Chicago, Burlington & Quincy, who spoke on "Problems Common to Railroads and Shippers," by Henry Bruere, president of the Bowery Savings Bank of New York, and member of the railroad committee of mutual savings banks, who talked concerning "The Investor and the Railroads," by G. C. Lucas, president of the Traffic Club of New York, and director of transportation, the National Publishers' Association, who treated of "The Functions of the Traffic Club," and by T. C. Burwell, vice-president and traffic manager of the A. E. Staley Manufacturing Company, whose subject was "The Aims and Purposes of the Association."

Merle Thorpe, editor of Nation's Business, as guest speaker at the formal dinner, delivered a talk entitled "Trail Blazers and Track Layers." In his address of welcome, C. J. Brister, vice-president in charge of freight traffic of the New York Central, and chairman of the board of directors of the New York Club, pointed out the features of the metropolis and sketched the new railway developments of the city.

Need for Higher Net Revenues

Mr. Budd, while taking cognizance of the recent increases in passenger and freight revenues and outlining in brief the tremendous advances made in comfort and speed for passengers and expeditious movement of freight, sounded the warning that the roads have by no means reached a truly healthful prosperity; that their financial future is greatly in doubt through maladjustment of revenues with expenses and the rumblings of proposed legislation.

In his treatment of revenues, Mr. Budd stressed the fact that net returns are not yet satisfactory. Admitting that the steady and rapid downward trend in railway passenger traffic has been arrested for the first time in 14 years, and that since 1933, railway travel has been growing, he nevertheless insisted that the profit on business as a whole is not sufficient. Even though there has been a recovery of 40 per cent or more in freight volume since the low point in 1932, expenses have been mounting rapidly and charges for service have been lowered. "Expedited freight schedules have increased the ton mile cost of moving freight, for it is an axiom among operating men that increased speed of freight trains can be attained only at a sacrifice of economy. Thus we have a superior service provided at greater cost selling at reduce rates by force of circumstances."

In reference to rates he said: "The charge per unit of service has been going down quite steadily, due both to the force of competition from the many new forms of transportation and to the knowledge that scientific advances in some types of industry, together with improved local transportation, would otherwise tend to decentralize and localize manufacturing." The carriers can avoid waste, Mr. Budd argued, by improving their plant and effecting consolidations. As to abandonment, he asserted: "Branches that no longer enjoy enough patronage to pay their way should be abandoned and not permitted to burden other traffic and other parts of the system. Laws that would encourage and not make difficult the doing of these things would be in the public interest. Unwillingness of governmental authorities to permit economies to be made by private operation is the strongest evidence that cost would be excessive under government ownership."

Water and Highway Routes, Not Vehicles Alone, Should Be Regulated

In a passage treating of the competitors of the railroads which together comprise the "transportation quintuplets," the speaker pointed out that "projects involving large sums for public improvements that create competitors and maintain them at public expense should be scrutinized before the expenditures are authorized, just as is done in the case of new railway lines which must be approved by the Interstate Commerce Commission before being undertaken. Since the revenues from traffic handled must support the country's rail system, the more traffic handled the less will be the unit cost, and any traffic diverted to competitors will tend to increase the rates on what remains. Volume does not so definitely affect such carriers as trucks and boats, because they do not have the investment in plant, such as roadway, waterways and terminals, which are provided for them at public expense."

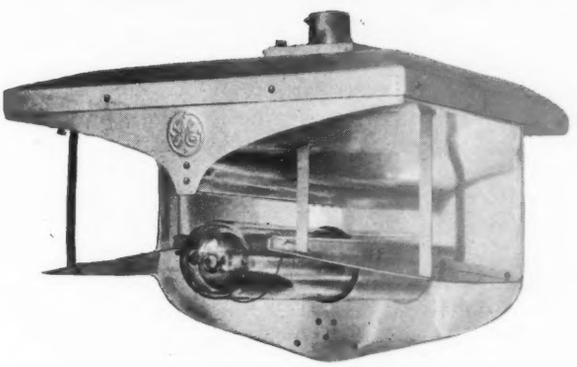
In conclusion, Mr. Budd appealed to the assembly: "The problem is vital to the entire country. If it is to be solved it must be done by intelligent consideration and mutual forbearance on the part of legislators and administrative tribunals, of shippers, of investors, and of labor and management. It is to bodies such as yours that we must look for the keen appreciation of the various phases of the problem and the constructive thought and leadership necessary to its disposal."

Plea for National Rail Policy

Speaking as a layman who, by reason of his institutional post, has been required to become a keen student of railway problems, Mr. Bruere concurred in general with the conclusions of Mr. Budd. While recognizing the share of the roads in general recovery and the success of their managements in controlling operating expenses, he pointed out that prices and wages threaten to rise this year; that 87 roads, 31 of which are Class I, representing 27 per cent of the total mileage of the country and 18½ per cent of the total railway capital investment, remain in bankruptcy or receivership; that the carriers still owe the Reconstruction Finance Corporation 389 millions of 718 millions borrowed; that bonds to the amount of 149 million dollars are still in

(*Continued on page 720*)

Illumination for Grade Crossings



Top—Night View of the Pine Avenue Highway Crossing with the Niagara Junction Railway at Niagara Falls, N. Y. Below—Type of Sodium Luminaire Used for the Lighting of Highway Crossings

Terminal switching railroad in Niagara Falls, N. Y., improves safety for highway drivers at night

AS a means of improving safety at grade crossings, the Niagara Junction Railway Company, a terminal switching railroad operating 28 miles of track in Niagara Falls, N. Y., has installed special electric lighting equipment for the night illumination of seven city street grade crossings and five private crossings.

Two floodlights, using sodium lamps, were installed at each crossing, the units being so mounted as to illuminate not only the crossing and the two approaches, but also any cars or locomotives occupying or immediately approaching the crossing. Sodium lamps were chosen for this installation for several reasons. The light output of a sodium lamp, rated at 250 watts, is equal to that furnished by a 500-watt incandescent lamp, thus reducing the cost of power. When operating, the comparatively large bulb of the sodium lamp is filled with a distinctively golden-yellow light which, although of relatively low brilliance, is decidedly effective in illuminating dark-colored objects such as box cars painted red. Furthermore, the distinctive yellow color of the beam from the sodium lamps, being different from ordinary street lighting, serves as a caution warning to motorists. A third advantage is that a set of Alzak aluminum deflectors is mounted inside the lamp bulb to effect a redirection of the light that results in a characteristic pattern of distribution. A fourth advantage is the absence of glare which is present when incandescent floodlighting is used, the yellow lights offering no interference with switching operations and signaling.

Each lamp is mounted in a deep parabolic reflector so

that most of the light is emitted at angles less than 10 deg. below horizontal. The complete lighting units, or, as technically known, the luminaires, are mounted from 20 ft. to 26 ft. above the ground and are spaced 100 ft. to 120 ft. apart, depending on the width of the street. One such unit is furnished for the approach to the crossing from each direction. The luminaires are adjusted to direct the light beam downward to illuminate the crossing and the pavement approaching, as well as the freight cars occupying or closely approaching the crossing. The light is so directed that cars standing or moving on the crossing are illuminated directly by the light unit on the near side and are shown as an outline silhouette by the light coming from the other side. The feed to the lamps is controlled through automatic time-clock switches, which are adjusted for the different seasons of the year to turn on the lights at dusk and turn them off at daylight.

This lighting equipment was installed by the railroad as a means of improving the safety to motorists at these crossings during night hours. Train operation on these tracks is confined to switching movements at comparatively low speeds, not exceeding 25 m. p. h. When serving various industries, cars are left on the main line for extended periods so that automatic track circuit control of standard flashing-light crossing signals is not entirely practicable, because the signals operate for extended periods when no train movement over a crossing is imminent. Furthermore, when making switching movements, several freight cars are oftentimes pushed by a locomotive and, although a trainman with a lantern may ride the leading car, some accidents have evidently resulted because automobile drivers could not readily see the dark cars when on the crossing or closely approaching.

The experience of the Niagara Junction Railway indicates that poor visibility at the crossings and approaches contributed to the causes for crossing accidents because, due to the circumstances explained above, motorists, after observing the crossing signals and waiting a reasonable time, proceeded over the crossing. For these reasons, it is expected that the illumination of the crossings will effect a reduction in the number of accidents at night.

The floodlighting units, complete with sodium lamps, used on this installation were furnished by the General Electric Company.

Traffic Clubs Hold Meeting At New York

(*Continued from page 718*)

default; and that no satisfactory reorganizations of bankrupt roads have been effected. Concerning returns on freight traffic, he revealed statistics which show that revenue per ton-mile in 1936 was 0.97 of a cent, as compared with 1.04 cents in 1932 and 1.27½ cents in 1921. And the emergency rates which contributed all but 50 million dollars of the 1936 net have been discontinued by the I. C. C. The speaker reviewed the contemporary outlook thus: "From this brief summary it is clear that the railroads are, by and large, giving a good account of themselves. In a number of instances the recovery of their mastery of their difficulties has been a brilliant achievement. Nevertheless they cannot earn enough, it seems, to restore their general credit, because costs are forced up while earnings are kept down."

Coming to the specific theme of his talk, railway investments, Mr. Bruere felt that unless net returns promise to increase, available credit will materially decline. "During the past forty years, with the growth of a saving surplus of huge proportions, about half of the funded debt of the railways has been provided from the treasuries of the life insurance companies and the mutual savings banks. These institutions will not continue to make such investments unless the lessons learned in recent years of depression are applied. No miracle of recovery will restore the railways in general to a proper state. It will have to be done by intelligent effort by all parties concerned and much hard work. The institutional investor will not forget the causes of railway financial difficulty. He will not, or shouldn't, mistake superficial recovery for intrinsic soundness.

"The fundamental difficulty confronting us in respect to the railroad industry in America, as I see it, is that we have no clearly defined national policy for the preservation and development of railway transportation." Stating the latter as the key point of his talk, Mr. Bruere went on to praise the underlying conception of the recent federal co-ordinator of transportation set-up and to assert that "sooner or later effort of equal magnitude and like purpose must be resumed in some form, not necessarily in the direction of determining how individual economies may be effected or specific methods of management improved, but in outlining the framework, at least, of a program for common effort by government agencies, the carriers, labor and shippers in building up a sound and progressively serviceable national transportation system."

In order to bring about this unified railroad policy, Mr. Bruere suggested that the following action be taken: "I propose, as a first step, that a representative body of ten men be created by joint action of interested parties to frame a transportation policy for America. This body should be chosen by its constituencies and not selected by any individual, except, perhaps, those who would represent the government. It should consist of equal representation of executives, investors, shippers, labor and government. It should be compensated for its services. It should be adequately staffed. It should be assured of cooperation from all sources. It should be given ample time to arrive at its recommendations. It should be commissioned to secure the adoption of its recommendations."

New Railroad Research

Reporting as chairman of the committee on education and research of the Association, Dr. G. Lloyd Wilson announced that, since the preceding convention, the outline of the study course in "Railroad Organization, Operation and Traffic," prepared and issued by the Committee, had been supplemented by a series of articles in "The Traffic World." He asserted that a booklet containing these articles is to be published.

Freight Car Loading

(*Continued from page 708*)

and 44,345 for the corresponding week last year, according to the compilation of the Dominion Bureau of Statistics.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada:		
April 10, 1937	47,344	28,461
April 3, 1937	50,104	29,174
March 27, 1937	45,567	29,378
April 4, 1936	44,345	25,287
Cumulative Totals for Canada:		
April 10, 1937	657,989	393,415
April 4, 1936	588,603	320,820
April 6, 1935	599,322	319,559

Motor Transport Section

The Central Vermont's Fast Merchandise Train Leaving New London

Central Vermont Features Modern Transportation

Rail-highway co-ordination, bus-air-rail travel and fast merchandise handling bring business

BY a combination of operating efficiency and advertising, the Central Vermont has made its "Rocket" freight service well and favorably known throughout the country. The use of rail-highway co-ordination, the collection and delivery of passengers as well as freight, the running of fast, well-equipped day coach trains, and the provision of joint air-bus-rail service have also featured its campaign for modern transportation.

The term "Rocket" was originally applied to a fast merchandise train operated in connection with the Boston & Maine from Boston to northern Vermont points on an overnight schedule. This train still operates, but the term "Rocket" is applied to all of the Central Vermont fast merchandise service, including the rail-highway co-ordinations, as a well-advertised slogan.

Service Needs Studied

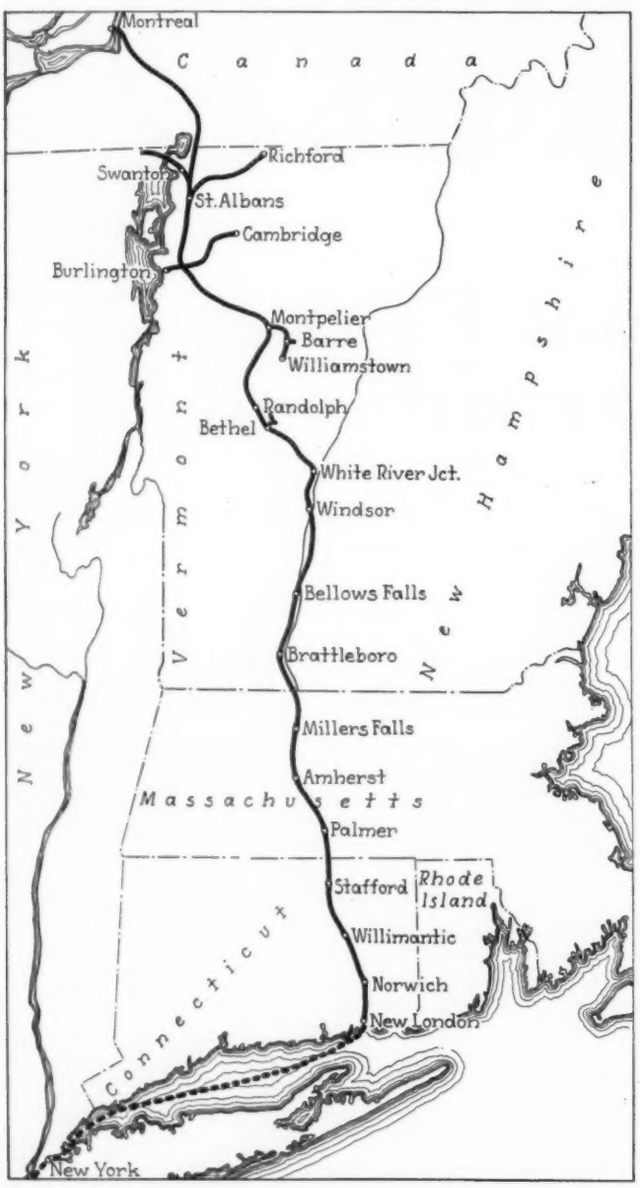
The Central Vermont was one of the pioneers in inaugurating pick-up and delivery service in the East, having begun on July 4, 1932. This local trucking service has been expanded by the use of inter-station trucks, until the entire railroad is covered with these auxiliary highway services to provide for more prompt and more flexible merchandise handling. Before such truck routes were set up, however, the shippers were consulted as to their needs; local sales practices and the schedules of traveling salesmen were carefully studied, and the service placed on the basis of what the shipper really wanted—and could get—from highway competitors.

Following this, each Central Vermont caboose was painted to serve as a rolling advertisement of Rocket freight service, and local newspapers and radio station facilities were used for further advertising. In addition, every C. V. employee who could be spared from his regular duties was given a portion of the territory to cover during a week's campaign. Handbills advertising the service were thus distributed to every shipper and receiver in the territory, advising of the new service.

The trucks used are under contract. However, they, too, are painted to advertise Rocket service. The truck operators and drivers also attend the monthly sales meetings conducted by the traffic department, but attended by railway men of all departments for the purpose of

Advertising Is Carried on the Highway as Well as the Rail Equipment

developing employee solicitation. Three factors have made employee solicitation a success: First, the new service brought merchandise back to the railroad, so that a previous steady decline was halted and new business was secured to the extent that present merchandise tonnage handled is run well over 50 per cent greater than that handled in 1932. The second factor has been the monthly sales meetings and the third is found in the fact that the Central Vermont is a relatively small railroad, and its executives can keep in touch with the employees much more frequently than would be possible on a larger system.



Steamship and Rail Line of the Central Vermont Showing the Collection and Distribution Points

How the Service Is Rendered

The Central Vermont provides overnight service between New York and points in Connecticut and Massachusetts, as far north as Brattleboro, Vt. The merchandise is handled by the steamships of the Central Vermont Transportation Company between New York and New London, Conn., approximately 125 miles, via Long Island sound, and by a combination of a fast mixed merchandise-express-passenger train and highway trucks between New London and Brattleboro, the rail distance between these two points being 121 miles.

The train schedule in question was originally protected by a rail motor car which ran from New London to Brattleboro in the morning and returned in the afternoon. It was necessary to run such a train for a variety of reasons, but it was run at a loss until its potentialities as an adjunct to Rocket freight service were discovered. After an experimental period, when a few freight shipments were made in the baggage compartment of the rail motor car, it was determined that the new fast service could be operated successfully. Accordingly, the rail motor car was exchanged for a steam train, handling passengers, mail and express, but also handling merchandise in baggage cars equipped for the purpose, including several set-out cars for various collection and distribution points. In accordance with the general plan for advertising this service, the baggage cars are distinctively painted and lettered to advertise Rocket service.

The company employs cartage agents in New York, who truck the freight to and from New York receivers and shippers and the pier. The freight is loaded on special trailers at the piers in New York and New London and the ships are equipped with side hatchways for loading and unloading these trailers by donkey engine. The use of such trailers provides for safe and convenient transport by water, and for efficient transfer between ship and motor trucks or cars at the piers.

Northbound, the train leaves New London at 4:45 a.m., as soon as the freight has been transferred from the ship, and, after serving the intermediate points, arrives in Brattleboro at 10:05 a.m. Returning, it leaves Brattleboro at 3:30 p.m., arriving in New London at 8:42 p.m.,

giving the ship plenty of time to arrive in New York early the following morning, so that the cartage agent may make his deliveries before nine o'clock to the widely scattered New York receivers.

Between New London and Brattleboro, the intermediate stations for both pick-up and delivery and interstation movements are served by numerous truck lines, which take the freight from and to the distribution and collection points where cars are set out by the train. The highway equipment, too, is brightly and distinctively painted and lettered to advertise Rocket service. These trucks are operated under contract with an independent trucking company, except between Amherst and Cushman, where the truck route is operated by the Railway Express Agency.

The concentration points are at such important centers as Norwich, Conn., Willimantic and Stafford; Palmer, Mass., Amherst and Millers Falls, and Brattleboro, Vt. At some of these points, freight is also interchanged with the truck routes of the Boston & Maine Transportation Company.

The line between Brattleboro and Windsor is owned by the Boston & Maine, the Central Vermont having trackage rights and through operating privileges only. Accordingly, no local freight service is provided between these points by the C. V.

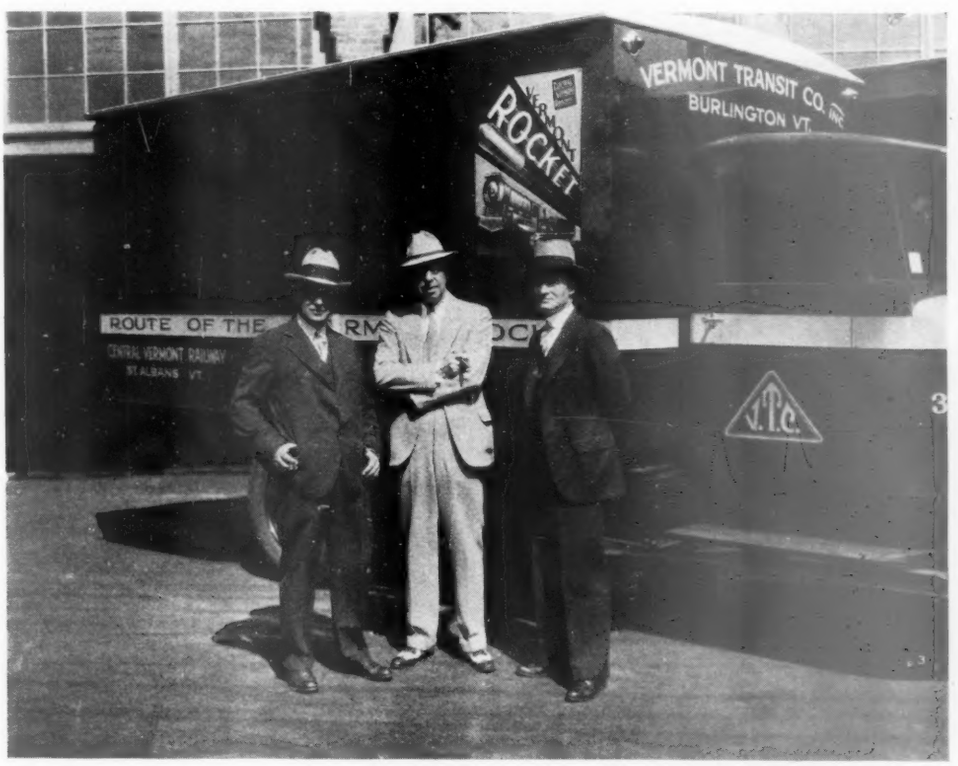
However, from Windsor north to the Canadian border, a system of rail-highway co-ordination is in effect similar to that on the Southern division. Second morning service is provided between this section and New York, and overnight service from and to Boston in connection with the B. & M., via White River Junction.

The principal concentration points are shown on the accompanying map. The operation of the truck routes in connection with the railway differs from that of the southern division only in that in northern Vermont there are more and longer branch lines served by truck instead of the former cumbersome and expensive handling of lightly loaded merchandise cars up and down these branches.

The Central Vermont has, wherever possible, simplified the needless complexity of the less carload rate structure by the establishment of all-commodity rates, based on the previous average return, and these have not only proved popular with the shippers, but careful studies indicate that they produce the same revenues, at far less expense and trouble to both the railway and its customers. The northern Vermont territory is peculiar in that there are a number of good-sized towns scattered among the mountains, off the line of any railway. The C. V. has no less than 24 such towns contiguous to its line, and, to meet truck competition, has made definite arrangement with local carters to handle merchandise from the nearest rail point to these towns. It is not possible for the C. V. to quote rates to such towns off its lines, but a special folder has been prepared for the information of the shippers and receivers in such places, showing what arrangements have been made between the railway and the carter and what the charges will be for joint rail-highway handling.

As previously indicated, the C. V. has also modernized its passenger transportation, and this, too, has had

Bus Service Is Used Between Burlington and the Main Line



Type of Equipment Used in Inter-Station Service

its effect on increasing the freight volume handled by the railway. The air service, for example, with its western connections, enables the Vermont quarry owners to get their bids to Chicago as fast as those from the Indiana stone belt. The air line, owned and operated jointly by the Central Vermont and the Boston & Maine, has recently purchased and put in service a number of new planes which have reduced the flying time materially. The new schedule provides service between Boston and Burlington, Vt., 191 miles, in 91 minutes, with stops enroute at Manchester, N. H., and Concord, White River Junction, Vt., and Barre-Montpelier. The Central Vermont operates a bus service between the airport at Burlington and its main line at Essex Junction, making close connection with its trains to and from Montreal, thus providing a through Montreal-Boston rail-bus-air route.

Other Passenger Services

Burlington is an important point on the Central Vermont, but its location at the end of an eight-mile branch from the main line at Essex Junction made operations expensive until rail-highway co-ordination was inaugurated. How this operates in freight service will be explained later. Passengers from or to Burlington for Montreal or Boston have two choices. They may either use the regular bus line operated between Burlington and Essex Junction, or, by payment of 25 cents extra, they may make use of the "collection and delivery" service for passengers. Limousines are provided by the C. V. for this service and the drivers call for the passengers at their homes, buy the tickets, check the baggage and make all arrangements for the journey.

This service is much used in connection with the Ambassador, the fast day-coach train operated between Montreal and Boston by the C. N.-C. V.-B. & M. Until June 23, 1935, this was a standard day train on a schedule of 9 hr. 50 min. southbound and 10 hr. northbound. On that date, it became a day-coach train, on an 8 hr. 10 min. schedule for the 327.2 miles. The train was equipped with new air-conditioned coaches and a reserved seat, parlor-buffet, club coach was also provided where passengers can lounge and obtain meals at low prices. The result was an immediate increase in traffic, and, for the first year, the train averaged from 28 to 35 per cent more passengers per month than in the previous year. To match the rest of the equipment, parlor-buffet cars are now being modernized in the railway's shops for use on this train, and, after they are placed in service this winter a small charge will be made above the day coach rate for the use of the club facilities.

Thus, in both passenger and freight service, modern transportation has brought results to the Central Vermont in the way of increased traffic.

Bus Air Conditioner

AN air conditioning unit for motor coaches has been installed in a White research coach which is now making a demonstration tour throughout the south. This unit was engineered and constructed by the Kelvinator division of Nash-Kelvinator Corporation. It is built into a deluxe streamlined coach, constructed by the White Motor Company, which contains modern innovations of passenger bus construction. Powered by a White six-cylinder engine, designed primarily for long distance high speed trunk line operations, the research coach offers unusual riding comfort for passengers. The filtered, cooled and dehumidified air is changed completely once every three minutes. The wide seats are equipped with reclining backs and a lever control that moves the seat forward and lowers the back simultaneously, thus allowing the passengers more space. The coach is capable of sustained operation of greater than 600 miles per day and of an operating speed of 55 miles an hour. It travels 5½ miles on a gallon of gasoline. The new coach accommodates 29 passengers and a driver.

Under this unique air conditioning system outside air, brought in and cooled by the unit, passes through ducts built into the luggage racks directly above the seats and running the length of the coach on both sides. The air is forced downward from these compartments onto a mushroom horizontal deflector which circulates the cooling air in such a manner as to envelop the passengers indirectly, without the discomfort of cold air drafts. The outside air enters at the front of the body and is conveyed immediately to the air conditioning unit at the rear, where it is thoroughly filtered to remove dust and

The Air-Conditioned Lord Kelvin White Bus

dirt, cooled to a comfortable temperature and dehumidified. The equipment operates continuously.

Power for both the refrigerant compressor and the fan for air circulation is furnished through a belt drive from a gasoline engine. The power unit operates continuously at constant speed. The loading of this engine is fully constant and varies with the demand for cooling. When the desired temperature is reached, the thermostat breaks the circuit to the liquid solenoid valve. This stops the circulation of the refrigerant to the cooling coil. Since the refrigerant compressor operates continuously, it eventually pumps all the refrigerant back through the air cooled condenser to the liquid refrigerant receiver.

New International Van for Package Service

International Harvester's New Truck Line

THE International Harvester Company announces an entirely new line of motor trucks ranging in capacity from light delivery units to the largest six-wheeler. These new models include conventional four-wheel units, six-wheelers with both dual-drive and trailing axles, and cab-over-engine types. The complete International line consists of 26 models in 77 wheelbases, with gross vehicle weights ranging from 4,400 to 62,000 lb. Powerful truck engines, numerous wheelbases, a variety of rear axle ratios, two-speed rear axles, and multiple-speed transmissions, especially in the heavy-duty models, permit selection for each hauling task.

These new Internationals provide the standardized cab-to-rear-axle dimensions necessary to body interchangeability, and they also permit mounting of standard length bodies of stock sizes. Front axles are set back, and this, together with the relocation of rear axles and cabs, contributes to greatly improved load distribution, not only of body and payload but of gross weight as well. Thus loads on front and rear tires are more uniform, relieving the usually overloaded rear tires by transferring a greater portion of the load to the front tires. Wheelbases, in conjunction with correct cab-to-rear-axle dimensions, are available to accommodate all lengths of bodies. Many improvements and new features of design and construction have been incorporated in the engines of the International models. While greater power has been provided for each of the new models, there has been no sacrifice in fuel economy. Performance, climbing ability, pulling power, and operating economy are decidedly improved.

All International truck engines are heavy-duty power plants. The types FA and FB valve-in-head engines which power the two-ton and larger Internationals have replaceable cylinders; counterbalanced, vibration-dampened crank-shafts; full-pressure lubrication; precision-type, replaceable-shell, main and connecting-rod bearings; hardened exhaust-valve seat inserts; downdraft carburetion; scientifically designed manifolds, oil-bath air cleaners, air-cooled generators; and other outstanding features which provide maximum power, unexcelled performance, long life, and economy. The HD type "L"-head engines, which power the half-ton and three-quarter ton models, have a displacement of 213 in. and the engine in the 1½-ton models has a displacement of 232 in. These sturdy power plants have many features of the larger engines including counterbalanced lubrication; hardened exhaust—valve seat inserts downdraft carburetion; mechanical fuel pumps; and oil-bath air cleaners. Easy handling, safety at all speeds, and sturdy, responsive steering mechanism are especially important in truck operation. In the design of these new trucks attention was given to steering and its relation to safety and easy handling. As a result, these new models—due to widetread front axles, improved construction, more effective turning ratios, and larger steering wheel diameters—assure maneuverability and safety at low speed in traffic and high speed on the open highway.

Heavy Duty Internationals in Hill-Climbing Test Under Load

Rail-Highway Co-ordination Succeeds in England

Services offered by the Great Western illustrate what the individual British roads are doing

Part II*

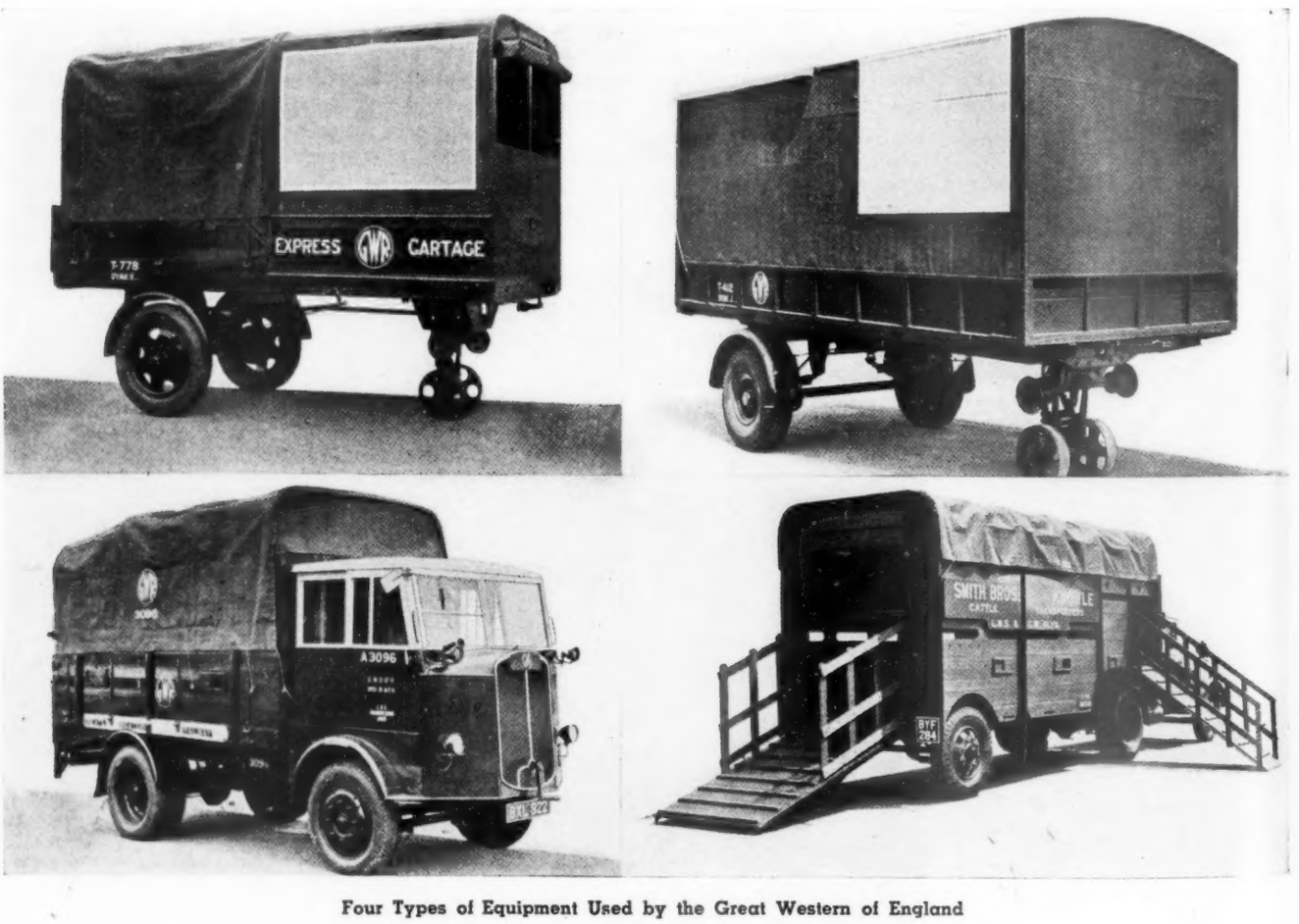
CO-ORDINATED services of the Great Western provide an example of what the individual British railways are doing in that connection. That road now operates a fleet of more than 2,000 motor vehicles and the equivalent of $400,000 was authorized for the purchase of new highway vehicles in 1936, as compared with $300,000 for the same purpose in 1935.

Highway competition is an old story in England, where the relatively short distances produced highway competition even in the horse and wagon days. As a matter of fact, the Great Western's authorized stable of draft horses is still 2,000 head today. With the advent of motor transportation, however, highway competition became so keen as to constitute a serious menace to the very existence of the railways, some years before such competition was keenly felt here. The British railways found the answer in the operation of large fleets of both trucks and buses on their own account, thus continuing in their time-honored capacity as the chief transportation medium in England.

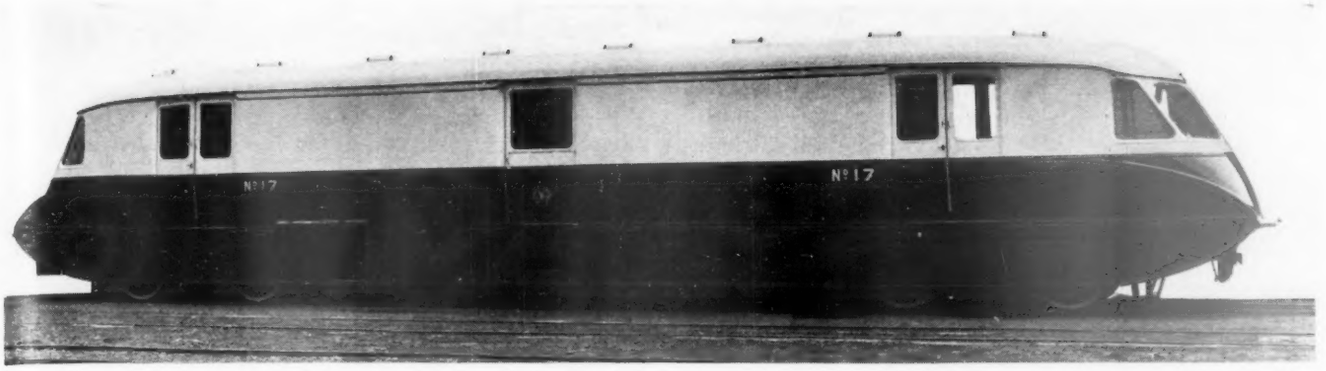
Tonnage is the measure of success in any transportation scheme, and, on the Great Western, the amount of freight handled by highway showed a large increase in 1935, as compared with 1934. The increase in the net income was also satisfactory, although not in proportion to the increased tonnage, since the prices of gasoline, tires and accessories all increased in England during the year.

The universal collection and delivery service contributed a large share to this tonnage improvement. The movement of such heavy tonnage commodities as feed, fertilizer and roadstone also showed an increase, and several contracts were secured for hauling building materials for new schools, office buildings and government

* Part I appeared in the Motor Transport Section of the *Railway Age* of February 27, page 369.



Four Types of Equipment Used by the Great Western of England



This Streamliner for Handling Merchandise is Equipped with Side Doors for Convenient Loading and Unloading

airports. At the same time, through the use of containers, the movement of household goods by rail and highway jointly showed a gratifying increase during the year. In this connection, the complete equipment of a large farm in Knutsford, including household goods, farm implements and live stock, were moved by the Great Western to Bletchington, a distance of nearly 200 miles, in record time. The freight was handled in a special train, with the household goods in containers, and the occupants were able to settle in their new home on the evening of the day the removal took place.

Co-ordination Plans

The Great Western purchased a number of formerly independent bus and truck routes operating in its territory in 1935. During that year also, operations were begun with the other railways to simplify and co-ordinate railway cartage work in London. The co-ordination of the trans-shipment of freight between the stations of the four systems in the London area is now in operation. This plan provides for the dispatching of a fleet of 30 six-ton articulated trucks and 120 trailers in joint service on definite schedules between the stations. When the plan is made entirely effective, it is expected that these trucks will be called upon to transport a thousand tons of merchandise per day. A similar scheme is now being worked out between the Great Western and the other railways to provide for co-ordination of highway service in the transfer of "parcel" freight, which represents a considerable item on all British railways.

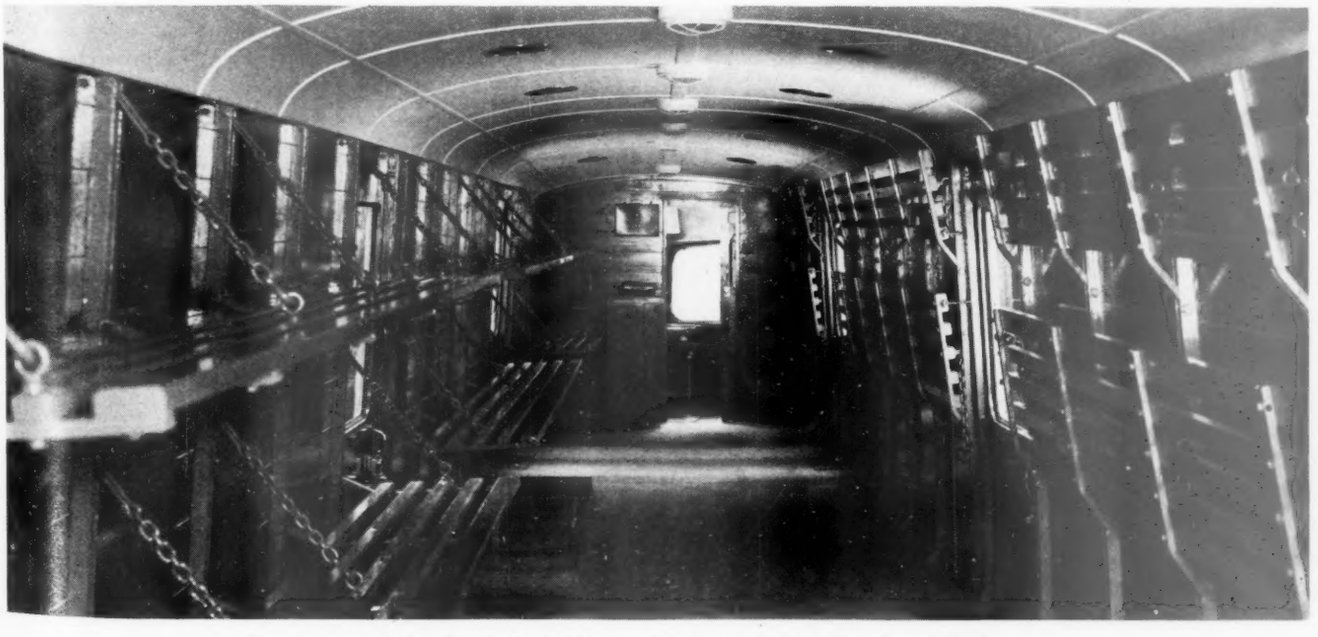
Equipment

Several types of equipment new to England were purchased by the Great Western during 1936. A light type for the "parcels" traffic was designed and built, having a two-stroke low-speed engine, an epicyclic gear box and a special differential of simple construction. This vehicle is for light service and was designed with low maintenance costs in view. So far the designers' hopes have been borne out in this respect.

An "articulated" type of vehicle, consisting of a non-separable one-wheel tractor and a four-wheel trailer, as shown in the accompanying illustration, was given a thorough try-out in collection and delivery work. It was so successful that it is planned to perform all such service with this type of vehicle hereafter.

In haulage to the new buildings and airports, boggy ground was frequently encountered, and a six-wheeled tractor, with a super-powered eight-cylinder engine, was developed to meet this condition. These tractors have only been in operation a few months but, so far, they have successfully met needs for which they were built.

The extension of the Great Western's fleet required



The Interior of the Streamlined Merchandise Car, Showing the Parcel Racks

the erection of new garages at three different locations in 1935, and a large additional repair shop has been constructed at Swansea.

An interesting rail-highway movement in the spring season of the year on the Great Western is the flower movement from the Scilly Isles. On one day, 30 tons of daffodils, narcissi and other flowers representing 2,000,000 blooms, were delivered in London by the Great Western, with another half million flowers delivered at other destinations.

Almost all types of transport are utilized in the conveyance of these flowers from their sheltered ledges on the cliffs and islands to the markets. First they are picked while still in the bud and put in small baskets from which they are transferred to wheelbarrows or donkeys at the side of the fields for conveyance to the packing sheds. There they are placed in jars of water for some hours before being packed and carried down to the quay at St. Mary's in the Scilly Isles on motor cars, horse and even donkey-drawn vehicles. Here they are slung on board the steamer and carefully stowed with other flowers which have been brought by motor boats from the neighboring islands.

About nine o'clock in the morning the 40 miles' journey to the mainland begins. At Penzance a fleet of Great Western motor trucks awaits the arrival of the boat to carry the flowers to the waiting "flower expresses" into which they are speedily loaded. The railway vehicles used for this fragile freight are of a special ventilated type which ensures the circulation of a current of air throughout the whole journey, but protects the flowers from frost. The moment the flowers are safely loaded, with those which have been pouring in from the mainland around the Land's End district, the "flower expresses" leave on their journey to London, 305 miles away, and even longer journeys to northern towns. On arrival at their destinations the same evening, they are delivered to various markets by still another fleet of G. W. motor trucks.

An experimental merchandise service, operated by a specially built streamlined rail car, in conjunction with pick-up and delivery service, was put into operation by the Great Western last year, providing fast service on various types of merchandise. This car leaves London at various times in the day, making round trips in many directions.

The new car is similar in design to the 16-passenger rail cars now in service throughout the system, but in place of the big observation windows, it has three glass-panelled doors on each side to facilitate the rapid stowing and unloading of parcels from the series of racks. The car is driven by two 130 h.p. oil engines and is capable of a speed of 70 to 75 m.p.h.

The service marks a new era in the conveyance of merchandise by rail, and is intended to avoid the delays which sometimes result to trains at stations from the loading and unloading of merchandise of which they are now to be relieved.

Another recent G. W. R. innovation is the "Stable-to-Station" service introduced in the Swindon-Marlborough area for the conveyance of racehorses by highway from racing establishments to the most convenient main line station for entraining. This new service is operated by a motor tractor with articulated trailer to carry two horses, and provided with a separate roomy compartment for the grooms.

It considerably reduces the time of the through journey as it obviates the necessity of walking the horses to the nearest station, generally situated on a branch line from which the services are necessarily inferior to those which can be given from a main line station.

Greyhound Stations

TO improve the service for its passengers at the rest stations along its 30,000 miles of bus routes, the Greyhound Lines have established a new subsidiary to be known as the Greyhound Travel Stations, Inc. This will comprise an association of all of the 600 present rest and lunch stops, for the purpose of standardizing the facilities, including the fuel supplies, and providing the bus passengers with better meals and toilet accommodations than are now available at many of the stations.

Under the new plan, franchises will be issued to the station managers, who will be required to maintain certain standards, including architectural conformity. Such stations now exist at intervals of about 70 miles on the system, and it is further planned to install a string of lunch-wagons of the so-called "diner" type, at intervals of 10 miles along each of the bus routes.

It is expected that from two to five years will be required for the complete working out of the details of this plan, but the first of the stations are to be ready by June 1, with 100 in operation by the end of this year.

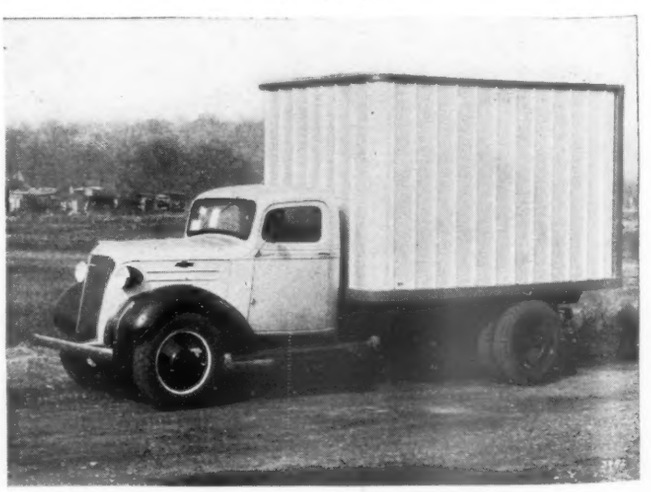
I. C. Goes to Trucks

FOR some time past, the Illinois Central has been conducting successful experiments in the way of regaining merchandise traffic, culminating in the establishment of an overnight merchandise train from Chicago to Memphis, with set-out cars to intermediate points. As a logical development of this activity, the railway now plans the installation of a system of inter-station motor trucks centering at Carbondale, Ill.

Seven trucks will operate out of Carbondale. One will operate northwards, via De Soto, Elkville, Dowell, Duquoin, Tamaroa, Dubois, Ashley, Richview and Irvington to Centralia. Two different routes are planned between Centralia and Cairo one of which will serve 9 intermediate points, the other 12. Three routes will be operated between Carbondale and Benton, serving intermediate points such as Carterville, Herrin, Zeigler, Christopher, Mulkeytown and Buckner. One route will be between Carbondale and East Saint Louis, and the seventh route from Carbondale east to El Dorado.

This service will be put into effect as soon as the application now on file with the Illinois Commerce Commission is approved.

* * *



New Trailmobile Unit for Light, Fast Collection and Delivery Service

Communications . . .

Need Exists for Standard Round-Trip Rates

St. Augustine, Fla.

To the Editor:

For a number of years the railroads have been concerned with the measure of reduction, and a simplified way of stating the bases to authorize, for the round-trip or vacation traveler; numerous and varied plans being used with varying ticket limits as judgment seemed to indicate, based on probable conditions and demands. At the present time there exists a multiplicity of such fares in effect, when with reasonable and efficient consideration on the part of the passenger traffic officers, two, possibly three, bases would be ample to meet every practicable requirement on the part of the traveling public.

It should be within the bounds of possibility to devise some plan that could, with profit, be applicable to all railroads alike and thereby make uniform and simple the method of arriving at the round-trip fares, as well as the percentage of discount in each of two or more "classes" as may be deemed necessary.

Eventually something of the kind will be seen to be advantageous and in line with that thought it may not be inappropriate to suggest that as the present unrestricted one-way fares are now on a common basis, i.e., three cents per mile: that railroads consider the advisability of establishing round-trip or vacation fares by the simple method of applying agreed-to percentages to the published unrestricted one-way fare, or more strictly speaking, to double the unrestricted one-way fare.

Isn't the time about here for all lines to decide to authorize round-trip or vacation fares that will be continuously in effect; tickets to be sold daily whenever called for at such fares as will encourage the "Travel by Train" idea and at the same time minimize the chances for such passenger to return by some other mode of transport?

For example: Short limit tickets—say for 30 days, could be sold at 75 per cent of double the one-way unrestricted fare. Tickets with a longer limit—say six months, could be sold at 85 per cent of double the one-way unrestricted fare. For tickets with still longer limit—say twelve months, if and when occasion should justify, the fare could be 90 or 95 per cent of double the one-way unrestricted fare.

If the ten-day or fifteen-day ticket is desired the fare could be made 70 per cent of double the one-way unrestricted fare.

J. D. Rahner,
General Passenger Agent,
Florida East Coast.

Massiveness Not Needed For Car Comfort and Safety

Inglewood, Calif.

To the Editor:

The letter written by L. J. Callanan, recently published in these columns, was very interesting. Under the title, "Are Railroads Going Sissy?" he lauds a proposed 40-ton super-airliner and ridicules the railroads for their endeavors in reducing passenger car weights to something like this figure.

The airliner he admires, and all other aircraft, are made possible only by the kind of engineering skill that railroad car builders are now employing in the design of their newer equipment. Aircraft built "real heavy" would not even carry its own weight, let alone any pay load. In modern all-metal aircraft, 30 per cent to 45 per cent of the gross weight is pay load; to equal this, the 95-ton railroad car (not even counting a power plant) would have to carry 430 passengers!

Mr. Callanan wants a 95-ton car or else a one-ton trailer—can there be no compromise? Nor can I agree that the 95-ton car is comfortable. There are vibrations, jars, jerks, and jolts coming constantly from three directions; these and the various rattles, bangs and clanking noises are not "good enough for me" when I know all can be, and are being, eliminated by progressive and intelligent engineering.

Riding comfort is determined by correct basic design of trucks, springs and other suspension parts—not by bulk. Ride the bed of a large motor truck over the same rough stretches you traverse daily in your new light-weight sedan and hear your teeth rattle. True, some of the new trains do not ride well, but the causes are *now* well known and these do *not* include lack of bulk as a factor.

If Mr. Callanan should wonder why his railroad securities, if he has any, do not pay dividends, perhaps he can account for it by considering that the average passenger train weighs from 30 to 40 times the pay load it carries and compare this with the profitable ratios in the airplane above cited. It seems about time that the railroads are also run for profit rather than accommodation.

And as for the railroads going sissy; is mere massiveness synonymous with manliness? This attitude reminds me of the small boy who hates having his face washed because he fears the "sissy" taunts of his gang. Aggressive pioneering with new basic designs is, to me, more manly than retiring behind the bulky equipment of the past and peering out occasionally to observe: they were good enough for grandpa " . . . thus they are good enough for me."

Paul K. Beemer.

Defects in Proposed Pension Plan

St. Louis, Mo.

To the Editor:

The representatives of the railway managements and employees who reached the agreement in respect to a retirement plan for rail employees, a summary of which appeared in a recent issue of the *Railway Age* (March 20, 1937, page 473), are to be commended not only for this achievement, but also for the publicity given the summary of the proposed plan prior to the formal submission of the bill to Congress.

In the consideration of the major items of the proposed legislation, it is possible the effect of certain provisions may have been overlooked or not fully realized. No doubt those drafting the proposed bill will welcome constructive criticism, particularly where it is felt the present wording of the bill may result in a situation perhaps not intended, but manifestly unwise or unfair to any particular group. With this thought in mind, may I call attention to one or two provisions as outlined in the authorized summary.

1. Apparently no provision is made for the retirement of anyone under 65 years of age unless he has had at least 30 years of service. If this is the case, an employee with only 29 years of service would not be eligible for retirement until he is 65 years of age, even though he had lost both legs and both arms. Should not the required period of service for those disabled be less than 30 years?

2. Just why is the retired rail employee to be prohibited from regular gainful employment in some other line of work? There is no such restriction in the Railroad Retirement Act of 1935. Neither are retired postal employees or others receiving government pensions barred from other employment. It is true those to be retired under the Social Security Act are to be barred from "employment" such as comes under this Act, but apparently there is no prohibition against employment "in some other line of work," such as that in the exempted classifications including agriculture, for charitable organizations, and in the service of the U. S. government, a state or a municipality. Why should the retired rail employee be thus discriminated against?

Perhaps it is thought such a restriction would help the unemployment situation. But would it not have the exact opposite result? If one eligible for retirement knew he could never

supplement his pension or keep his mind occupied by employment after retirement, would not the tendency be for him to hang on to his present railroad job as long as possible? Without this restriction, he might retire and thus make room for some other rail employee. Would not this restriction tend to decrease the efficiency of railway personnel, especially those in the older bracket, and tend to increase rather than lessen unemployment in general? Why not omit this provision entirely? These retired rail employees do not do enough work after retirement to interfere materially with other employment, but to deny them the freedom of working if they want to and are able to, would be indeed most depressing. Take it from one who has faced this situation and bear in mind that nothing is more saddening than the lack of "hope".

3. If one who retires is to be denied "regular gainful" employment in some other line of work, what is to constitute "regular gainful employment"? "Raising chickens," "renting rooms", or looking after a few small investments might be termed regular employment and is expected to be gainful. It would be well for some designated authority, say the Retirement Board, to be given some leeway in determining what constitutes regular gainful employment.

4. If no annuity is to be paid to any employee who retires and engages in other employment, it is to be hoped this paragraph of the bill will be so worded that this will apply only to the month or months when so employed. Otherwise an honest attempt of a retired employee to supplement his pension by other employment so as to support himself and dependents might result in his losing entirely a pension to which he is entitled and which he may later on badly need. Either regular annuity payments should be resumed automatically when said employment ceases, or some designated authority, say the Retirement Board, should be permitted, upon proper investigation to resume annuity payments to anyone previously granted an annuity or pension.

5. It is gratifying to note that those now on rail pension rolls will continue to receive pensions, even though their age and years of service may be less than that required of those hereafter retired. These employees were retired only after a thorough investigation in each case. Many of them have retired because of disability. Even though unable to perform railway service they have adjusted themselves to other employment. Not a few of them have been able to supplement their pension (usually small because of their limited service) by income from other employment, and are thus supporting themselves and, in some cases, dependents. Should not these handicapped pensioners be encouraged and aided, not further restricted? Regardless of whether or not those hereafter retired be barred from employment, surely this restriction should not apply to those already retired, especially those retired because of disability. Bear in mind, many of these now on pension are younger than those who will be retired hereafter. They did not know of this restriction when requesting retirement. In most cases their pensions will be less than those who will be retired hereafter, with similar age and service. In any event, it will be tragic, in many cases, if those already retired account of disability, be not permitted to continue in any employment which they have found they can do, regardless of whether this is regular or gainful. In our opinion if paragraph 9 of the authorized summary of the proposed plan reflects the wording of this feature of the proposed legislation, and this paragraph is not eliminated entirely, there should be added after the word "retires" the words "after the enactment of this Act," making this paragraph read, "No annuity will be paid to anyone who retires *after the enactment of this act* and engages in regular gainful employment in some other line of work." Or in fairness to those retired because of disability, there might be added after this paragraph the words, "unless said employe has been retired by the railway management on account of physical or mental disability."

Many cases could be cited of retired rail employees now in other lines of work, and vitally in need of the income and peace of mind coming from said work. One, a man who by working as a night watchman is earning enough with his small pension to support himself and a widowed daughter and her several small children, this dependency having arisen since he retired. Another, a young man, blind, who by means of a little business where he takes orders over the telephone is supplementing his small pension sufficiently to keep himself, wife and children from being objects of public charity. There are many such cases.

You may feel that when you retire you will be through work entirely. But you know not what may happen. Many have found that after retirement, a necessity has arisen for further income required for the support of themselves and dependents. Others have found that the pasture of idleness on the other side of the fence was not so green as it appeared. Take away your freedom to work and you will be most miserable. In your own case, do not overlook also the possibility of legislation later making retirement compulsory at a certain age, or of the individual railroad by which you are employed adopting a policy of compulsory retirement at a specified age. If this should happen, do you not think you should be permitted employment elsewhere?

But regardless of your interests and mine, I plead for those unfortunates already retired who did not wish to retire, but were forced to do so because of being physically unable for the duties of railway service, but who have found work they can do in some other field. A very slight change in the wording of one clause of the act would correct an objection which I am sure was not intended.

If you agree with the suggestions herein made, or care to make other suggestion for minor change in the proposed plan, it would be well for you and your representatives to bring this promptly to the attention of those responsible for drafting or enactment of this proposed legislation. There is so much of good in the proposed plan, let us strengthen it by removing any weakness therein.

ONE WHO IS INTERESTED.

The Patrons' Point of View

Carn Brea, Shalford Road,
Guildford, England.

TO THE EDITOR:

Yielding to no one in my profound admiration of railroads on the North American continent, I have been forced to ask myself, not once, but many times, "To what extent do railroad officials possess the kind of imagination which is capable of seeing their patrons' point of view, especially when that point of view is reasonable?"

Picture this scene on September 1, 1936. The crack passenger train of a railroad (which shall be nameless), consisting of 17 steel cars, of which six were "first-class" sleepers, the last one being a compartment observation car. The train was crowded and, naturally, people came crowding into the only lounge car on the train—the observation car. But every seat was taken. And who occupied—for some three hours—two seats right opposite me? Need I ask the question! Two burly railroad officials, quite indifferent to the claims of women passengers—patrons of their company. Yet this same company always refers to its patrons as its guests!

If you care to publish my letter and any reader thinks I may be mistaken in my facts, why I'll be glad to send him full particulars. Can't be fairer than that, can I?

My suggestion, then, is that railroads should not allow maintenance and operating officials to occupy valuable space on their crack trains at the height of the traveling season. But if they insist on it, then they might at least instruct their officials not to advertise the fact that they are officials to people who, in the last analysis, are helping to pay their salaries. My experiences last summer clearly indicate that railroads still haven't the least notion of how easy it is to lose a thousand dollars worth of business through their fault. On one train—belonging to a company known, I imagine, the world over—I encountered five or six people accustomed to luxurious standards who vowed they would never travel by that route again.

When a railroad has many strings to its bow, as this one has, it's sheer lunacy to fail to remedy these matters. A little honest and intelligent research would prove that these defects really do exist.

G. N. MOUNT.

NEWS

New B & O Trains Start on April 25

Spring schedules bring new "Shenandoah" and improved "Royal Blue"

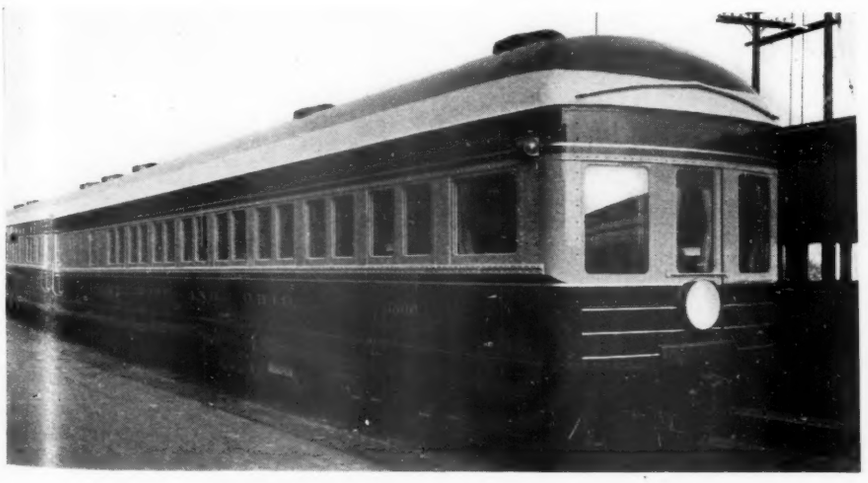
The Baltimore & Ohio will place in service on April 25, the date of the inauguration of Spring schedules, an improved eight-car streamlined train which will take the name of the Royal Blue and will operate on the same schedule as the present train of that name, leaving New York in the morning for early afternoon arrival in Washington and starting the return run from Washington at 3:45 p.m. The train, which consists of a combination smoker-baggage, four coaches, a diner, and a chair car and observation car, was designed and built at the B. & O.'s shops in Baltimore.

A feature of three of the four coaches in the train is the unusually large lounge and smoking rooms for women, which are adjacent to the lavatory. One car has a lunch counter, where light refreshments of the dining car standard may be had at cafeteria prices. The train also provides tray service in the coaches. The dining car is divided into two compartments, one serving as a regular diner and the other, which seats 10 people, furnishing tavern service. Furnishings are bright in color and are in the modern tradition. The standard-weight steel coaches which comprise the new train rest upon the regular six-wheel rubber-insulated trucks which have been in service on the road for several years. A tight coupler, also rubber insulated, as introduced on the original lightweight Royal Blue cars, complements the equipment. Preparatory to initiation of regular service, the train has been exhibited to the public at Baltimore, Washington, Wilmington, Philadelphia, and Jersey City.

"The Shenandoah," a new train between Chicago and New York, will also be placed in operation by the Baltimore & Ohio on April 25. The train will consist of regular Pullman club, sleeping cars, diner and coaches. Stewardesses trained in hospital service and skilled in domestic affairs will be assigned to the coaches. The train is scheduled to leave Chicago at 10 a.m. and arrive at New York (Jersey City) 8:11 a.m., the following morning. The run has been so arranged that "The Shenandoah" will receive passengers from over 45 other trains from the North, West and South and connect with trans-Atlantic steamships at New York.

Change in Average Demurrage Agreement Rejected

The Interstate Commerce Commission has found not justified a proposal of the Association of American Railroads Tariff Bureau to insert in average demurrage agreements a provision for the immediate cancellation of such agreements, for any breach thereof, at the option of the carriers. The order is without prejudice to the publication of a substitute cancellation provision agreed upon at the hearing. The latter, if published, would permit immediate cancellation "for any failure or refusal to pay charges lawfully accruing under this agreement," whereas the carrier proposal in more general language would have permitted the termination "for any breach of the terms of this agreement."



Rear End of the B. & O.'s New Royal Blue

1936 Purchases Top Billion Mark

B. R. E. reports on last year's expenditures by the Class I roads

Class I railroads of the United States in 1936 expended in excess of one billion dollars for capital improvements to rolling stock, roadway and structures, and for fuel, materials and supplies, according to a "Review of Railway Operations" by the Bureau of Railway Economics, Association of American Railroads. This review is based on complete reports for 1936.

Capital expenditures in 1936 for locomotives, freight and passenger cars, and also roadway and structures totaled $298,991,000, an increase of $110,689,000 over 1935, and the greatest since 1931. For equipment alone, capital expenditures in 1936 amounted to $159,104,000 compared with $79,335,000 in 1935; expenditures for roadway and structures totaled $139,887,000 compared with $108,967,000. The carry-over into 1937 of unexpended authorization for capital expenditures amounted to $187,693,000.

Purchases of fuel, materials and supplies of all kinds totaled $803,421,000 in 1936, an increase of $210,396,000 compared with 1935, and the highest since 1930.

Class I railroads in 1936 spent $1,238,000,000 for maintenance of equipment and right-of-way. This was an increase of $162,000,000 above such expenditures made in 1935. For maintenance of equipment, a total of $783,000,000 was spent as compared with $682,000,000 in 1935; for maintenance of way, $455,000,000 compared with $394,000,000.

The average number of employees in 1936 was 1,065,970, an increase of 71,600 compared with that for 1935, and the payroll was increased by $205,000,000.

"The railways in 1936," according to the Review, "made a definite contribution to economic recovery. The larger expenditures of the railway industry in that year meant more money put into circulation, more men employed, and more orders for factories and mills. To place any brake upon this movement in the near future, by means of burdensome legislation or otherwise, would mean a definite backward step on the pathway to normal business levels."

Broadcast From Frisco Fan Train Successful

A successful broadcast from a moving train was made by the St. Louis-San Francisco on April 11, when it carried 100 per-

sons on a special train, the "Frisco Fan," from St. Louis, Mo., to Springfield, where railroad enthusiasts witnessed the various stages in the construction of the 16 locomotives now being built. The broadcast was made from a mobile transmitter on the train to various amateurs located in towns along the right of way, who in turn rebroadcast the signals to a commercial station, WTMV, in East St. Louis, whence they were relayed to the radio public. The program consisted of interviews with various persons on the train. In addition to the broadcast, a loud-speaker hookup in each of the cars kept passengers informed of the progress of the train and of points of interest.

N. J. Roads Resume Tax Fight

New Jersey railroads have renewed their fight in the federal court at Trenton against the allegedly exhorbitant levies of the State of New Jersey on railroad property. The roads have asked the court for a permanent injunction against the rate of tax assessed during the past three years.

Chinese Railways to Have Inspection Plant

The Chinese Ministry of Railways is planning to establish a national railway material plant in which all equipment purchased abroad will be inspected and checked and domestic supples made ready for use. It is expected also that a chemical-treating plant for ties will be built.

British Railways' Traffic Head in U. S. Dies Suddenly

Thomas R. Dester, general traffic manager in the United States for the Associated British and Irish Railways, died of a heart attack on April 21 on a train traveling between Chicago and New York. Mr. Dester was born in England and prior to coming to the United States in 1929 to represent the Associated British Railways he served in various positions with the Midland Railway and the London, Midland & Scottish Railway at Derby, England. He was 58 years of age.

Largest Gathering of Railroad Employees

What is probably the largest social gathering of railroad employees occurred on April 21 when members of the Association of Railroad Booster clubs, an organization representing more than 80,000 rail employees residing in the Chicago area, held two dances in the two largest ballrooms in that city. Northside employees and their friends danced at the Aragon ballroom, and southside employees at the Trianon ballroom. Special entertainment features, including the awarding of an automobile, were arranged.

Western Lines to Hold Sales Meeting

A sales meeting of approximately 1,000 persons, consisting of employees of all railroads with offices in Chicago, will be conducted by the Central and Western Passenger associations at the Knickerbocker hotel, Chicago, on April 26. Motion pictures and sound equipment will be used to demonstrate the right and wrong ways to interest the traveling public in patronizing the railroads, while three sales skits will further emphasize proper conduct in solicitation. One of these will portray the sale of a ticket in a ticket office, another will enact a telephone conversation in an information bureau, and the third will show a city passenger agent soliciting the patronage of an executive. E. J. Gallmeyer, vice-president and general sales manager of the Wayne Pump Company, will be the principal speaker.

R.C.C. Pay-Off

The Railroad Credit Corporation will make a liquidating distribution of one per cent on April 30, 1937, amounting to $735,407, as announced by E. G. Buckland, president. Of this amount $522,394 will be paid in cash and $213,013 will be credited on carriers' indebtedness to the corporation.

This will bring the total amount distributed to $52,213,903, or 71 per cent of the fund originally contributed by the carriers participating in the "marshalling and distributing Plan," 1931. Of this total $25,728,124 will have been returned in cash and $26,485,779 in credits.

Railway School Planned for South Africa

The South African Railways and Harbors is planning to set up a school for future railway workers, the office of the general manager reports. At present the departments of the railway division absorb an average of 600 men a year from the ranks of the so-called Special Service Battalion, and it is to facilitate the training of these neophytes that the school is to be inaugurated.

It is intended that instructors will conduct classes in general train operation, in telegraphy, and in office duties. The school will be equipped with the standard working equipment of train service, including signal units and telegraph instruments; possibly supplemented by a miniature railway system. The management of the railway feels that such an educational system will not only afford full training for "greenhorns" but also test their suitability for railway careers.

No 1937 Western Railroad Week

At a recent meeting of member lines of the Western Association of Railway Executives, it was decided not to hold a Railroad Week in the west in 1937. The decision, however, is contingent upon further developments. Should the western lines decide to repeat the magazine and newspaper advertising campaign conducted last year, it may be found advisable to repeat Railroad Week. At the same time, should the Association of American Railroads undertake a national celebration, the western lines will participate. Western lines may undertake a Railroad Week in 1938, after which time the event will possibly become a biennial rather than an annual affair.

Further Pay Restoration in Canada

The Labor Department announced in Ottawa last week that a board of conciliation had recommended restoration by next April 1 of 10 per cent wage deductions to about 10,000 Canadian National employees, members of the Canadian Brotherhood of Railway Employees.

The board, in a unanimous finding, recommended, in effect, the same treatment of these employees in the matter of pay restoration as the railways will accord members of the standard labor organizations.

Procedure under which the basic wage rate will be restored is as follows: The 10 per cent deduction was reduced on April 1 to eight per cent; it will be cut to seven per cent on June 1; six, August 1; five, October 1; four, December 1; two, February 1, 1938; nothing, April 1, 1938.

Golden State Has New Club Cars

Four club cars similar to that in the accompanying photograph have been added to the consist of the Golden State Limited. These cars, built in the shops of the Chicago, Rock Island & Pacific, are unusual with colored walls, venetian blinds, indirect

The Golden State Has New Club Cars

lights and modern furniture. A barber shop, shower room and sleeping accommodations for the cars' staff are at the rear of each car. In two cars the ceiling and walls and the leather of the furniture and on the front of the bar are colored dubonnet, while in the other two they are pastel yellow.

Heavy Italian Electrification Program

Electrification of 1,300 kilometers of Italian State Railway lines in the vicinity of Milan, at an estimated cost of 1,200,000,000 lira, will be begun immediately, according to newspaper reports from Italy. Upon the completion of this work both of the principal trunk lines between Milan and Rome, one of which extends via Genoa and the other by way of Bologna, will be completely electrified. The remainder of the mileage now to be electrified will complete the triangle between Parma, Fidenza and Fornova, one side of which is included in the main line between Milan and Bologna. The electrification of the Central Station in Milan will also be included in the present plans. The mileage of electrified lines in Italy as of December, 1936, totalled approximately 6,000 kilometers, of which 3,200 kilometers belonged to the State Railways, 1,780 to private lines and the remainder to local transportation companies.

Shop Crafts Maverick Union Seeks C.I.O. Hook-up Sanction

A resolution asking the Committee on Industrial Organization to sanction the activities of the Brotherhood of Railroad Shop Crafts of America, was passed by delegates attending a meeting at Chicago on April 13 to 17. This action, which is not a definite request for affiliation, is part of a plan to secure national recognition. The brotherhood is an independent railroad union of shopmen, the history of which dates back to 1922. In 1933, it began to increase its membership in competition with the Railway Employee Department of the American Federation of Labor, the member unions of which are among the 21 railway brotherhoods and which represent a number of shop employees. At the present time the Brotherhood of Railroad Shop Crafts reports a total membership of 35,000 shopmen on practically all railroads. It now seeks representation on the National Railroad Adjustment Board.

Transport Discussions at U. S. Chamber Meeting

Transportation discussions at the annual meeting of the Chamber of Commerce of the United States, to be held in Washington, D. C., from April 26 to 29, will include a luncheon session on April 28 and an address at the annual dinner on the following evening by Sir Edward Beatty, chairman and president of the Canadian Pacific. Juan T. Trippe, president of Pan American Airways, will also speak at the dinner.

All forms of transportation will be represented by speakers at the April 28 luncheon session. Carl R. Gray, president of the Union Pacific will present the railroad point of view; Robert K. Carter, president of Carter Brothers, Richmond, Va., will speak for highway transport; William B. Rodgers, vice-president of the McCrady-Rodgers Company, Pittsburgh, Pa., for the waterways; and W. A. Patterson, president of United Air Lines, Inc., for air transportation. An open-forum discussion will follow these addresses.

I.C.C. Allows Rate Increases on 100 Items to Become Effective

Rate increases on approximately 100 commodities which had been withdrawn from the general Ex Parte 115 investigation became effective on April 20 when the Interstate Commerce Commission failed to suspend tariffs filed by the carriers. At the same time suspension orders were entered in connection with proposed increased schedules on nine other items involved in this April 20 group. The latter included sodium acetate, bog iron ore, moss, bones, carbon black, insectides, fluorspar, and cooperage.

Newspaper reports have placed the estimated annual yield from the increases at between $6,000,000 and $7,000,000, but railway traffic people generally remain reluctant to make any predictions until the flow of traffic under the new rates is observed.

The failure of the commission to suspend the great bulk of these April 20 schedules follows a similar development last month when increased rates on a similar list were allowed to become effective.

I.C.C. Refuses Reductions in Meat Rates

The Interstate Commerce Commission on April 15 handed down a decision which refuses to allow the railroads to reduce freight rates on meats and packing house products from Chicago to various destinations in central freight association territory, through which the carriers hoped to avoid an estimated loss in revenue of $1,000,000 annually by reason of truck competition. The decision held that the reductions, which ranged up to 35 per cent, were not justified and would result in undue prejudice to packers at other points in central territory such as Detroit, Columbus, Cleveland, Cincinnati, and Indianapolis. The reductions were originally scheduled to go into effect on July 1, 1936, and would have expired on June 30, 1937. They were intended to be an experiment to see whether or not the railroads could recoup some of the traffic from the trucks. The rates were suspended by order of the commission on the complaint of packing interests.

Sun Valley Lodge to Reopen for Summer Season

The Union Pacific's Sun Valley Lodge, which closed its first winter sports season on April 1, will be reopened on July 1 for summer vacationists desiring mountain trails, fishing, swimming, tennis and horseback riding. The resort at Sun Valley, Idaho, will be open in July, August and September on the same American plan as was used during the winter season.

A building program, to be completed before next winter's sports season, includes the construction of another large hotel unit, the "Challenger Inn," which will take the form of a mountain village of Austrian-Swiss architecture. About a village square, surrounding a skating rink and open-air swimming pool, the buildings will be placed informally, offering Continental restaurants and cafes, a variety of shops, a motion picture theater, billiard rooms and bowling alleys. About 200 double guest rooms, 100 with baths, will accommodate the guests. All of this program of extension is planned to appeal to ski and winter sports enthusiasts with modest purses.

Pennsy Announces Competition for Scholarships

Notices calling attention to four scholarships to be awarded this year to sons of Pennsylvania Railroad employees have been distributed by H. A. Enochs, chief of personnel, to all departments of the railroad. Two of these scholarships are granted in memory of Frank Thomson, former president of the P. R. R. The winners of these will each receive $800 annually for four years, and are privileged to select technical courses in any approved American college.

Another of the scholarships is endowed in memory of William Henry Brown, former chief engineer of the Pennsylvania. Its annual value is $500 to be applied toward any course offered to undergraduates at Princeton University. The fourth scholarship, in memory of John Clark Sims, former secretary of the company, is available for payment of full tuition for four years in any course at the University of Pennsylvania. Persons already in the employ of the railroad are eligible to compete for this scholarship. Candidates for these scholarships must take the examination of the College Entrance Examination Board in June, and the winners will be determined by the marks received in these tests.

Crossing Accident Verdict Set Aside

The Sixth Circuit Court of Appeals reversed a judgment for plaintiff in a recent railroad crossing accident case on a verdict for $46,500 in the Federal District Court for eastern Michigan. Pitcairn et al (receivers of the Ann Arbor) v. Brandes, 87 F. (2 d.) 929. The crossing sign required by the Michigan statute had been broken the day before the accident and re-erected by the repair crew, but lacked the cross-arm bearing the word "Rail." The cross-arms with the words "Road" and "Crossing" remained. The only claim of negligence submitted to the jury was the company's failure to repair the sign.

The Circuit Court of Appeals declared that although the railroad had been negligent in failing to replace the cross-arm on the sign, there was no evidence that this proximately caused or contributed to the collision with plaintiff's automobile. The train gave unusually loud bell and whistle signals. The plaintiff, who was driving at a speed of 40 to 50 m.p.h., could have seen other warning signs 360 and 170 feet from

the crossing. It was held that her failure to slacken speed constituted an independent intervening cause, and, therefore, the sole proximate cause of the collision, and that the railroad was entitled to a directed verdict.

Senate Committee Acts on Three Transport Bills

The Senate interstate commerce committee this week voted to report favorably the water carrier regulatory bill, the freight train limitation bill and the bill for the protection of existing joint rail routes and through rates. The water carrier bill (S.1400) was introduced by Senator Wheeler and would place water carriers operating in interstate and foreign commerce under the regulatory powers of the Interstate Commerce Commission. The freight train limitation bill (S.69) is sponsored by Senator McCarran of Nevada; it would amend the interstate commerce act so as to prohibit the operation of any freight train consisting of more than 70 cars, exclusive of the caboose. The joint routes bill, also introduced by Senator Wheeler, would make "prima facie unreasonable and contrary to the public interest" the elimination of any existing through route or joint rate without the consent of all carriers parties thereto, or authorization by the Interstate Commerce Commission.

The committee also decided to hold hearings April 27 before a sub-committee on the bill introduced by Senator Lonergan of Connecticut to provide for the establishment of a national safety standards commission to promote the reduction of accidents and at grade crossings.

Railroads Have 46,439 New Freight Cars on Order

Class I railroads on April 1 had 46,439 new freight cars on order according to an announcement of the Association of American Railroads. This was the greatest number on order on any corresponding date since 1926 when there were 49,524. On April 1, last year, the railroads had 13,562 cars on order, and on the same day two years ago, there were 482. Of the new freight cars on order on April 1, this year, coal cars totaled 23,703; box cars (including both plain and automobile), 17,404; refrigerator cars, 2,731; flat cars, 926; and stock cars, 1,300.

Class I railroads had 359 new steam locomotives on order on April 1, this year, a larger number than on any corresponding date since 1930 when there were 442. New electric and Diesel locomotives on order on April 1, 1937, totaled 24. New freight cars placed in service in the first three months this year numbered 6,831, the greatest number installed in any corresponding period since 1930. In the first three months last year, 2,984 were put in service, while two years ago there were only 568. New steam locomotives installed in the first three months this year totaled 42 compared with three in the corresponding period last year and 12 in the period two years ago. New electric and Diesel locomotives put in service in the first quarter of 1937 numbered seven compared with one in the same period last year and 30 in the same period in 1935. New freight cars and locomotives leased or otherwise acquired are not included in the above figures.

Pennsy's Spring Tables Show Changes

The Pennsylvania will inaugurate a number of improvements in its long distance train service and readjust many schedules to conform with the "daylight" time. In addition to the establishment of the new "General" as announced in the *Railway Age* of April 17, the road will shave 30 minutes from the time of the Pennsylvania Limited eastbound to provide an 8 o'clock a.m. (eastern daylight time) arrival at Pittsburgh, leaving Chicago at 9:00 p.m. (central daylight time), with arrival at Philadelphia at 4:18 p.m. and New York at 5:50 p.m. Westbound the Pennsylvania Limited's schedule will be adjusted to daylight saving by an advance of 45 minutes throughout.

The Manhattan Limited's eastbound schedule will be shortened 35 minutes. Leaving Chicago at 11:30 a.m. (central daylight time), unchanged by city clocks, it will arrive at Philadelphia at 6:23 a.m. and New York at 7:55 a.m. (eastern daylight time). Improved overnight service from New York and Philadelphia to Dayton, Ohio, will be provided by operating the St. Louisan via Dayton instead of Piqua, as heretofore. On its new routing, the St. Louisan, leaving New York at 7:05 p.m. (daylight saving time) will arrive at Dayton at 9:22 a.m. (standard time).

Other through trains generally between New York, Philadelphia, Pittsburgh, Ft. Wayne, Chicago and intervening cities observing daylight time will have their schedules moved forward approximately one hour by standard time, while in the territory southwest of Pittsburgh, to and including St. Louis, standard time will for the most part remain in effect.

Maine Roads Announce New Schedules

The new spring timetables of Boston & Maine and the Maine Central announce a new lounge, restaurant and parlor car service on "The Gull" between Boston, Mass., and Portland, Maine, in both directions; restoration of the run of "The Mate" between Portland and Waterville via Augusta in both directions; new and faster commutation service between Boston, Lincoln and Concord, Mass.; a change in the route of the streamlined "Flying Yankee"; and a general change of time by which schedules are changed an hour to conform to daylight saving time.

The "Flying Yankee," which will be maintained for the next month by steam-propelled service while the streamlined train is undergoing its yearly overhauling, will operate a round-trip in both directions over the Eastern route of the Portland division, leaving Portland, Maine, at 7:30 a.m. (Eastern Standard Time), and arriving in Boston, Mass., at 9:24 a.m. (E.S.T.). It will leave Boston again at 10:45 a.m. and, upon arrival at Portland, will operate to Bangor and return via Lewiston and Waterville. On the late evening trip from Portland to Boston, it will leave the northern terminus at 7:50 p.m. and arrive in Boston at 10 p.m., whence it leaves at 10:35 to return to Portland.

Its companion train, "The Mate," will leave Boston at 11 a.m. and arrive in Portland at 1:02 p.m. Commencing June 21, it will leave Portland for Waterville at 1:10 p.m. (E.S.T.) and arrive back in Portland at 7:45 p.m. Returning, it will leave Portland at 7:55 p.m. and arrive in Boston at 9:55 p.m.

New Pension Tax Bill

A new railway pension tax bill carrying rates slightly higher than those provided in the management-labor compromise agreement of last month was introduced in the House of Representatives on April 15 by Representative Doughton of North Carolina, chairman of the ways and means committee. The new bill (H.R.6484) is designed to meet the United States Treasury's objections to the compromise-agreement rates, and it is understood that the Treasury will raise no objection to the proposed new scale—leaving the matter up to Congress. Also, the bill provides for the return to the carriers and employees of taxes collected during 1936 (and a recalculation on the new basis of those collected this year) under the original pension tax act.

Under the proposed scale of rates the railroads and their employees would, during the first year, each pay into the fund approximately $5,000,000 more than under the compromise agreement, but still about $15,000,000 less each than under the original act. The bill sets up a one-quarter of one per cent income tax on employees and an excise tax on carriers in addition to those fixed by the compromise agreement. The rate on each for 1937, 1938 and 1939 would thus be 2¾ per cent; for 1940, 1941 and 1942, three per cent; for 1943, 1944 and 1945, 3¼ per cent; for 1946, 1947 and 1948, 3½ per cent; and thereafter, 3¾ per cent.

Under the provision whereby taxes collected during 1936 would not have to be turned over to the Treasury, the carriers would retain approximately $50,000,000 and return a similar amount to their employees. The House ways and means committee, to which the bill has been referred, this week held an executive session and hearing at which representatives of various interests were heard. Meanwhile member roads of the Association of American Railroads will determine the latter's attitude toward the bill at a meeting to be held in Chicago on April 29.

Pennsylvania to Operate Inspection Tour of Altoona

An inspection tour of the Altoona works of the Pennsylvania, so arranged that friends in the east and west may meet, will be operated by the Pennsylvania on May 15-17 from New York, Washington and Chicago. The special train from Chicago is sponsored by the Railway and Locomotive Historical Society, Railroad Stories Magazine, Model Builders Guild and the Chicago Suburban Model Club. The cost of the 1165-mile round trip in coaches is $8.75. The inspection tour of the Juniata

Continued on next left-hand page

You've Got to Deliver . . . *FAST!*

Whether the train is passenger or freight—impatience is waiting at the terminal and wondering if there isn't a quicker way.

Modern railroading calls for speed, and speed can only be had with high horsepower locomotives.

With Modern Power you can move capacity trains at high speeds—trains that yield greatly increased net earnings.

LIMA LOCOMOTIVE WORKS, INCORPORATED, LIMA, OHIO

LIMA LOCOMOTIVE WORKS INCORPORATED

shops and the locomotive testing plant will occupy the 6¼ hours between the arrival of the trains at 9 a.m. and their departure at 3:15 p.m.

The New York contingent will meet the group from Baltimore and Washington at Harrisburg and continue together until arrival at Altoona at 1:40 p.m. Returning, the Easterners will leave Juniata shops at 4:10 p.m.

Sponsored by Railroad Stories Magazine, the Railway and Locomotive Historical Society—N. Y. Chapter, the National Railway Historical Society, and the Pennsylvania, the train will be operated on the schedule of the "Broadway Limited" (320 miles in 350 minutes) "or even better." From New York, the fare will be $5.25, and from Philadelphia, Washington and Baltimore the round-trip will cost $5.00.

The Central Vermont Analyzes Its Winter Sports Business

Edmund Deschenes, vice-president of the Central Vermont, places the 1936-37 winter sports business as being worth $80,000 to the residents and business establishments of the Stowe district of Vermont. This is cited as a striking example of what can be accomplished in the way of recreational industry development by co-operation between a railway organization and various groups in a municipality.

The analysis is based on the 3,000 passengers brought to the Stowe district this winter by the Central Vermont from New York, Boston and Montreal, 95 per cent being from the metropolitan district of New York, the remaining five per cent about equally divided between Boston and Montreal. The "breakdown" of the verified estimate of $80,000 of "new money" brought into Vermont, shows that village and farm homes in the Stowe district alone realized $10,000 through rental of rooms and sale of meals. Hotels and inns in the Stowe area took in an estimated $36,000 while restaurants, lunch rooms and "wayside" stands realized $6,200. Garages, taxi operators, communication companies and sports equipment merchants enjoyed a $16,000 business.

On the railway end, of the $80,000 brought into the state, the Central Vermont received $10,000 for rail transportation. These revenues are, of course, offset by the expenditures made by the railway to attract business to the district, which include wire tolls to furnish daily weather reports to all Boston, Montreal and New York newspapers and department stores; the publication of winter sports booklets; entertainment of metropolitan newspaper and magazine writers in Stowe; maintenance in New York and other cities of window displays in conjunction with the New Haven and Pennsylvania railroads; and the miscellaneous cost of solicitation.

Sales Contest for B. & M. Employees

Employees of the Boston & Maine are to be given a chance to demonstrate their skill as salesmen in a new contest announced in the current issue of the Boston & Maine Railroad Employees Magazine. Contestants are urged to send in as many "sales ideas" as they can, with the proviso that each idea be accompanied by a "new rider card" containing the names and addresses of three people who do not at present commute or regularly travel by train.

The contest, which runs from April 19 to May 19, will be judged by Doremus & Co., advertising agents for the railroad, together with three New England sales managers. Vice-president A. B. Nichols, chairman of the B. & M.'s advertising committee, will announce the winners and award the prizes.

The announcement contains several pages of commentaries to stir up thought and orientate the contestants in the theme. Among them is included the following points concerning what Mr. Average Citizen should know about rail travel:

More people will ride on the railroad:
When they know that it costs much less to ride by train than by automobile.
When they become familiar with the low-priced local fares.
When they realize that a commutation ticket costs even less per ride than the new low single fares.
When they know about new schedules and faster schedules.
When they know about our new equipment; streamlined, air-conditioned coaches, with their entire freedom from dust and where temperatures are always even and comfortable. (You'll be surprised at the number of people you will find who actually do not *know* that an air-conditioned coach is entirely dustless (and practically noiseless, too).
When they know about our free parking spaces.
When they realize that a train carries them rapidly from place to place without the slightest worry about traffic jams and delays.
When you have sold them on other advantages that occur to you, with your knowledge of local conditions in your particular locality and you tell them of the advantages of our service that apply particularly to the territory in which you work or reside.
When you explain to them that on a train a passenger can relax, read, knit, talk with friends and otherwise enjoy themselves.

The employee-contestants have an opportunity to win the following array of prizes: First prize—$300; second prize—$100; third prize—$50; five prizes of $25 each, ten prizes of $10 each; and, finally, 25 prizes of one day's extra vacation with pay.

New Schedules on the N. Y. C.

The New York Central with the inauguration of Daylight Saving Time on April 25 will change the departure times of the Twentieth Century Limited to conform with 5:30 p.m. departure from New York and 3:30 p.m. (Daylight Saving Time) departure from Chicago, giving arrival in both cities at 9 a.m.

In addition to a shift in time of through trains, the schedule of the Fast Mail from Chicago to New York, via Cleveland, Ohio, will be quickened 35 minutes between Chicago and Cleveland, with departure from Chicago at 9:50 a.m. (Central Standard Time) and arrival in Cleveland at 5:15 p.m. (Eastern Standard Time) and in New York 6:35 a.m. (E.S.T.) The Southwestern Limited eastbound will have its running time cut 10 minutes, leaving St. Louis that much later. This new departure time will be 9:25 p.m. (C.S.T.) with arrival in New York at 8:20 (E.S.T.) the following morning.

The Water Level Limited hereafter will leave Chicago 15 minutes later, giving 4 p.m. Daylight Saving Time departure for New York and arrival in New York at 10:15 a.m. (D.S.T.). The Wolverine, both eastbound and westbound, will have its departure times changed. Hereafter, it will leave New York at 5:30 p.m. (E.S.T.) and Chicago 1:20 p.m. (C.S.T.)

The Mohawk, New York-Chicago train, will leave New York at 10:45 a.m. (E.S.T.), 15 minutes earlier than at present, and will be operated on a 15-minute faster schedule, with arrival in Chicago at 7:10 a.m. (C.S.T.). To permit earlier arrival in Detroit, the schedule of The Mercury, the Central's streamlined train, which makes a round trip daily between Cleveland and Detroit, will be changed to leave Cleveland at 7:30 a.m., with arrival in Detroit at 10:15 a.m. (E.S.T.). The Mercury will leave Detroit at 5:30 p.m. (E.S.T.), with arrival in Cleveland at 8:20 p.m. (E.S.T.).

"Forty-Niner" to Augment "City of San Francisco"

A new steam train, which will be known as the "Forty-Niner" and the schedule of which will be staggered with that of the Streamliner City of San Francisco, will be placed in service between Chicago and San Francisco by the Chicago & North Western, the Union Pacific and the Southern Pacific about June 15. The train will be operated on a schedule of 50 hr. 42 min. westbound, and 49 hr. eastbound, for the 2,260 miles, the latter time being the basis for the train's name. It will leave Chicago at 10:10 a.m. on the 2, 8, 14, 20 and 26th days of each month, and will arrive in San Francisco at 10:52 a.m. the third morning. Returning it will leave San Francisco shortly before noon on the 5, 11, 17, 23 and 29th days of each month.

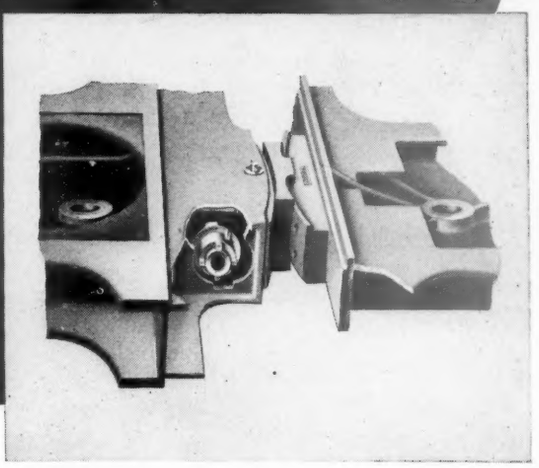
The Forty-Niner, drawn by a steam locomotive, will be an eight-car train, air-conditioned throughout, with sections, drawing rooms compartments and single and double bedrooms, lounge accommodations and barber shop, the capacity of all accommodations being adequate for 115 persons. An extra fare of $10 will be charged. The standard Pullman cars in the train will have rounded roofs, so that, in combination with the two-car, light-weight, articulated units Advanced and Progress, which the Pullman Company introduced last September, the train will be of streamliner design. In this two-car unit, which will be located at the rear of the train, the head car, of duplex style, consists of 16 single bedrooms, 7 of which are upstairs, and the remainder on the regular level, or downstairs. The rear car contains rooms, buffet and lounge, the forward half being given over to three double bedrooms and one compartment. A buffet will serve light refreshments, and the lounge, taking up one half of the car, will seat 26 persons.

Southern Pacific Strike Averted

A strike on the Pacific division of the Southern Pacific was averted 1 hr. 40 min. before the 6 p.m. deadline on April 16, when the Brotherhood of Railroad Trainmen and the Brotherhood of Locomotive Firemen and Enginemen decided to leave their grievances to a presidential arbitration board for settlement. The controversy in this case involves jurisdiction among these

Continued on next left-hand page

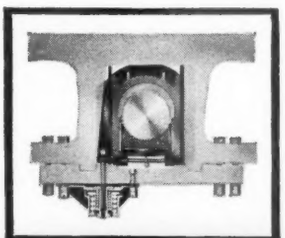
"Engineered for Easy riding"



The Type E-2 Radial Buffer makes for safer and easier locomotive riding.

Its spherical and cylindrical faces permit movement in any direction, while its predetermined frictional resistance dampens all oscillation between engine and tender and avoids all lost motion and subsequent destructive shocks to drawbar and pins.

Its twin, the Franklin Automatic Compensator and Snubber, takes the job of maintaining proper driving box adjustment and further improves smoothness of operation, extends locomotive mileage and reduces maintenance costs.



FRANKLIN AUTOMATIC COMPENSATOR AND SNUBBER

When maintenance is required, a replacement part assumes importance equal to that of the device itself and should be purchased with equal care. Use only genuine Franklin repair parts in Franklin equipment.

REG. U.S. PAT. OFF.

FRANKLIN RAILWAY SUPPLY CO., INC.

NEW YORK CHICAGO MONTREAL

brotherhoods and the Brotherhood of Locomotive Engineers and the Order of Railway Conductors in cases where members of the trainmen's brotherhood often are called upon to perform duties as conductors, and in cases where firemen render service temporarily as enginemen. When grievances arise they are referred to the brotherhood nominally responsible for the specific operation. For example, trainmen disciplined while serving as conductors would have to appeal to the grievance committee for the conductors' brotherhood. Last January the trainmen and firemen set out to change this situation and have their grievance committees represent their members, regardless of the duties they were performing. On January 28 the National Mediation Board assumed jurisdiction, and on April 14 President Roosevelt appointed a board of arbitration.

Following this action, the Brotherhood of Railroad Trainmen and the Brotherhood of Locomotive Firemen and Enginemen took the position that since these brotherhoods were not mentioned in the President's order, the strike as set would not be in violation of the order or the Labor Act. However, when the strike seemed inevitable, these brotherhoods issued a statement to the press as follows:

"In view of the public interest and advice from Washington, as well as the urgent request of A. D. McDonald, president of the Southern Pacific, with his definite assurance he will personally sit in the negotiations in the final disposition of these matters and that we have his further assurance that these two organizations will be treated fairly, we have agreed to postpone the strike, pending findings of the emergency board and further negotiations with the management."

Canada to Have Another Try at Regulation

The solution of Canada's railway problem is not to be found in cutting operating costs further, but in building up traffic and obtaining reasonable rates for that traffic by regulation, Hon. C. D. Howe, Minister of Transport, told the Canadian Club in Toronto.

Unless Canada was prepared to accept chaos in the transportation industry, centralized regulation of all forms of transportation, as proposed in the Transport Bill which was killed in the Senate six weeks ago, was imperative, he said.

He had "felt very badly" over that bill's defeat in the Senate, he said, but it was his intention to introduce a similar bill again next year if he "made some progress" in discussing the problem at various points across Canada.

The railway problem in a nut-shell, he said, was illustrated in the fact that in 1936 business activity in Canada was 112 per cent of the 1926 level, while the gross income of the two railways was only 76 per cent of what it was in 1926.

After tracing the development of various forms of transportation in Canada, stressing the growth of highway traffic, he suggested: "We seem to be about the only country in the world which can afford unrestricted competition in transportation."

South Africa had the tightest regulation, not permitting competition when an industry was being served by one form of transportation. Trucks were restricted to eight miles from their centre of operations; taxicabs similarly. In Britain, Australia and United States, rates and competition were being more strictly regulated continually.

"It seems to me there is room for that type of regulation in Canada," Mr. Howe said. "I appreciated that type of regulation had to be applied cautiously, but some such regulation was due."

The defeated Transport Bill would have changed the Board of Railway Commissioners to a board of transport commissioners, with powers—similar to its present powers over railways—over air, water and highway transportation, as far as Dominion jurisdiction permitted. The bill would also have allowed the railways to contract "agreed charges" with shippers who would ship exclusively by rail.

N.R.A.A. Finances in Excellent Condition

The annual report of the National Railway Appliances Association for the year ending March 31, 1936, as compiled by C. H. White, president-secretary of the Industrial Brownhoist Corporation, and audited by George Rossetter & Company, certified public accountants, shows that the four-day exhibit of this association which was held at the Coliseum, Chicago, on March 15-18, was conducted with an excess of receipts over disbursements amounting to $5,313.97. The revenues and expenses of the association for the fiscal year beginning with March 31, 1936, and ending with March 31, 1937, are shown in the statement below:

Receipts:		
Dues collected from members	$4,480.00	
Exhibition space rentals	32,787.20	
Refund of insurance premiums	73.38	
Total receipts		$37,340.58
Disbursements:		
Exhibition expenses	$26,465.21	
General and administrative expenses	5,509.15	
Space refunds	52.25	
Total cash disbursements		$32,026.61
Excess of receipts over disbursements		$5,313.97
Liquid assets March 31, 1936		24,943.24
Liquid assets March 31, 1937		$30,257.21

Owing to the fact that the total of the liquid assets on March 31, 1937, namely, $30,257.21, was considered larger than was necessary for the financial requirements of the association, the Board of Directors authorized a refund of ten cents per square foot of exhibit space to all companies that participated in the 1937 exhibit.

I.C.C. Hits Delay in Rail Reorganizations

Holding that there had been too much delay in railroad reorganization proceedings and that it would henceforth be the policy of the Interstate Commerce Commission to speed them up, Commissioner Mahaffie on April 15 refused a request of counsel for the insurance company group committee that the hearing on the Denver & Rio Grande Western reorganization proceedings be adjourned for a sixty-day period and announced that the commission expected to close the record in the case at a "final" hearing on June 2. Mr. Mahaffie went on to say that the commission had a duty to perform under the act. "The act provides," he said, "for the presentation of a plan by the debtor and any other party who desires to present one. We have afforded an opportunity for that. We can't continue this along indefinitely, allowing everyone to see the other's plan and then come in with one of his own."

Mr. Mahaffie told the hearing that interested parties would be expected to be prepared at the June 2 hearing to produce any alternative plans or additional evidence that they desired to submit. He said that there seemed to be an idea abroad that the proceedings are to be taken up in stages. "I shall hope that we can conclude the record in this hearing at that time. We can't in justice to the act prolong these proceedings," he asserted. William H. Hodges, counsel for the D. & R. G. W. requested that the hearings be closed with all possible speed, but he said that he did not desire to prevent the submission of any pertinent evidence. He also told the commission that all the necessary data concerning the road had been before the commission since last October, and that there was no reason now why the hearings should not be concluded. The adjournment of the hearing until June 2 came after three days of long-drawn-out cross examination during which Commissioner Mahaffie and the presiding examiners often sought to speed up the proceedings by cutting down the time of counsel and attempting to keep the discussion along pertinent lines. At the adjournment of the hearings on March 15, Examiner Boyden announced from the bench that the commission had denied the request of the Chase National Bank and other parties that the railroad be called upon to furnish new data regarding earnings for 1936 which would show a segregation by mortgage districts.

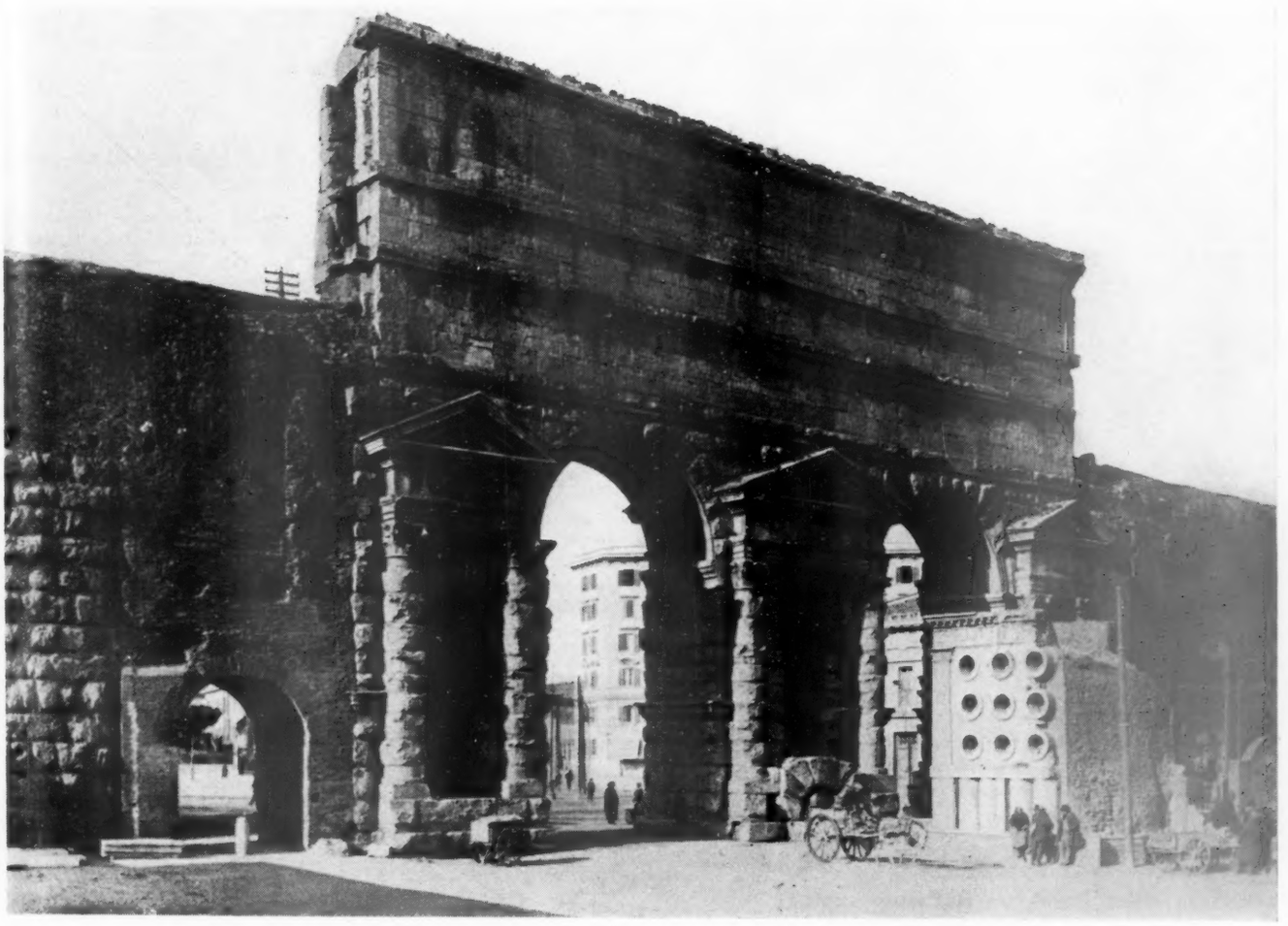
Injunction Against C. & S. Abandonment

A restraining order against the Colorado & Southern preventing the junking of its narrow gage branch line from Denver, Colo., to Leadville, was granted by District Judge William H. Luby on April 12. The court also ordered that the railroad be turned over to a company, the Denver, Leadville & Alma, organized to take over the line.

Efforts to abandon this line, which has not been operated profitably for several years, have been made at various times by

Continued on next left-hand page

NO. 12 OF A SERIES OF FAMOUS ARCHES OF THE WORLD



PORTA MAGGIORE, ROME

The Porta Maggiore was originally an archway conveying the Aqua Claudia over the street. Above was a second conduit through which flowed the Anio Novus. The Aqua Claudia, 42 miles in length, brought water from the neighborhood of Subiaco, and the Anio Novus from the sources of the river of that name a distance of 58 miles. The inscriptions record the construction of both aqueducts by the emperor, Claudius, A.D. 52. Aurelian converted the archway into one of the gates of the city wall, the Porta Praenestina, and Honorius enlarged it, while the Colomas used it in the middle ages as the nucleus of a castle. Remains of the constructions of Honorius and a long inscription of A.D. 405 may be seen outside the gate to the right.

* * *

Modern high speed train operation demands all the boiler horsepower the firebox can produce. The Security Arch is essential to full boiler capacity and at the same time it assures full fuel economy.

THERE'S MORE TO SECURITY ARCHES THAN JUST BRICK

HARBISON-WALKER REFRACTORIES CO.

Refractory Specialists

AMERICAN ARCH CO.
INCORPORATED

Locomotive Combustion Specialists » » »

the company. In 1930 the commission denied the company's application for authority to abandon the line from Waterton to Leadville, 131.67 miles, and branches, making a total of 185 miles. The company offered to donate the lines or any portion of them to any local interests or communities that might wish to operate them and two corporations formed for the purpose filed applications with the commission for authority to acquire and operate the line, but these were denied. On August 16, 1935, the company filed a petition to reopen the case and to amend its application by excluding the request for permission to abandon the western portion of the line between Leadville and Climax, 14.83 miles. After six years the commission authorized the abandonment of 170.22 miles of the Denver-Leadville narrow gage line and branches in Colorado.

On March 23, 1937, Victor A. Miller, a Denver attorney, filed suit in the Denver district court, asking that a receiver be appointed for the Denver-Leadville branch. He contended that the parent company has not acted fairly, since when he and his associates organized the Denver, Leadville & Alma to take over the branch line promises were made that locomotives and cars would be turned over to the new company. The injunction granted on April 12 was handed down a few days after the last train had been operated over the line. The restraining order is supported by the State Public Utilities Commission, through the attorney general, which has informed the court that it is satisfied that this company will operate the road and that it is needed for the mining industry and citizens along the route.

No Increased Rates on Railway Materials in Southwest

The Interstate Commerce Commission, by Division 4, has ordered the cancellation of tariffs wherein carriers serving the Southwest proposed to increase rates on iron and steel railway materials moving in carloads to, from and between points in that territory. The rejected schedules proposed to cancel existing commodity rates, and to substitute a basis at 32.5 per cent of corresponding first class rates. The latter is the basis fixed by the commission in the southwestern revision cases when no specific basis was fixed for railway materials, which have moved under commodity rates for many years.

The report sets up a table comparing the present commodity rates with the proposed schedules, and draws from the figures the conclusion that "the present commodity rates do not bear any consistent relation to the class-rate structure." The latter observation comes after it has been pointed out that in the examples given "the increases which would result from the proposed basis range from about 5 to 70 per cent." Also the report observes that the proposed rates would increase fourth-section violations, and would disrupt long-established relationships between competing points of origin. In this connection the competitive situation in the oil refining industry is mentioned, and attention is called to the fact that oil companies in the near future will be more or less continuously in the market for railway materials in order to equip their tank cars with side frames in accordance with the A.A.R. regulation.

The contention of the carriers that there is no valid distinction from a rate-making point of view between railway materials and the iron and steel articles upon which the proposed basis now applies is rejected, although the report observes that "no reason appears for the maintenance of a general level of rates on railway material substantially lower than that approved for the iron and steel list." It adds, however, that "the fact that the proposed level on the former is not in excess of a maximum reasonable basis does not warrant our approval of the fourth section departures which would be created."

Commissioner Porter, concurring in part, agreed with the finding of the majority but not with all of its statements.

New Reorganization Plan Is Presented for Cotton Belt

Public hearings on the reorganization of the St. Louis Southwestern were resumed before the Interstate Commerce Commission on April 20 with the announcement of a third plan of reorganization which was prepared by the protective committee for the road's first terminal and unifying mortgage bondholders. The commission is expected to receive the plan later in the week. W. F. Knobelock, traffic manager, told the commission that the company's gross revenues in March were approximately 1,940,000 as compared with $1,690,782 in March, 1935. He went on to say that he did not expect the traffic to continue throughout 1937 the gains showed during the last six months.

The new plan of the protective committee, which differs in many respects from the two other plans now pending, provides for fixed charges of $1,868,912 annually. This sum compares with $1,243,070 in the management's plan and $1,769,000 in the plan of the Chase National Bank and the Mississippi Valley Trust Company. The plan also provides that a total of $22,363,000 of obligations would remain undisturbed. These obligations consist of $20,000,000 of Cotton Belt first mortgage certificates, $1,413,000 of Cotton Belt equipment trust obligations, $500,000 of Gray's Point Terminal Railway first mortgage bonds and $450,000 of Shreveport Bridge & Terminal first mortgage bonds. Under the new plan the company would issue new securities as follows: $24,929,175 Series A 4 per cent mortgage bonds; $3,042,500 15 year 4 per cent notes; 477,520 shares of $4 preferred stock; and 284,287 shares of common stock. The old preferred stockholders would receive 1 new share for each old share and common stockholders 1 new share for each 3 old shares.

At the continuation of the hearing on April 21 Commissioner Mahaffie refused to order the railroad to prepare a study which would show the amount of traffic originating on each of the branch lines in order that the road might decide whether or not it would be economical to abandon operation on many of the branches. Commissioner Mahaffie said that his experience in handling many abandonment cases for the commission had taught him that statistics of this type were virtually useless in that they could always be construed in two lights. Later, Commissioner Mahaffie, at the request of counsel, ordered the company to furnish the various counsel the total amount of money received from each station for the year 1936 on the Texas lines of the company and on the rest of the lines.

Defines Municipal Zones under Motor Carrier Act

The Interstate Commerce Commission, by Division 5, has entered three orders defining in turn the commercial zones of New York, Chicago and St. Louis-East St. Louis wherein motor vehicle operations will be exempt from regulatory provisions of the motor vehicle act, other than those relating to the maximum hours of service of employees and safety of operation or standards of equipment. The orders in general fix the zones within narrower limits than had been urged by various interested parties.

With reference to the latter it is pointed out in the reports that, for the purposes of the act's exemption provision, "the commercial zone of a municipality and contiguous municipalities cannot be found to include all of the territory coming within the commercial influence of the municipalities. The commercial zone includes only those areas which are 'commercially a part' of the municipalities and are adjacent thereto. By restricting the commercial zones to areas which are adjacent to the municipalities and contiguous municipalities, it is presumed that Congress intended to restrict such zones to those areas in which transportation by motor vehicle is in the nature of an intraterminal movement. Ordinarily, only that transportation which is performed over city streets may be considered intraterminal in character. However, it may be necessary frequently to pass through small areas of unimproved land, or land devoted to agriculture, in order to transport passengers and property between points within a commercial zone."

On the foregoing basis the New York report fixes the commercial zone for that city as: "The area within the corporate limits of the cities of New York, Yonkers, N. Y., Mount Vernon, North Pelham, Pelham, Pelham Manor, Great Neck Estates, Floral Park, and Valley Stream, and Englewood, N. J.; the area within the borough limits of Alpine, N. J., Tenafly, Englewood Cliffs, Leonia, Fort Lee, Edgewater, Cliffside Park, Fairview, Palisades Park, and Ridgefield Boroughs, Bergen County; and that part of Hudson County, N. J., east of Newark bay and the Hackensack river."

The Chicago zone is defined to include: "The area within the corporate limits of Chicago, Evanston, Ill., Oak Park, Cicero, Berwyn, River Forest, Spring Forest, Worth, Homewood, and Lansing; the area within the township limits of Niles, Ill., Maine, Leyden, Norwood Park, Proviso, Lyons, Riverside, Stickney, Worth, Calumet, Bremen, and Thornton Townships, Cook County, Ill.; and the area within the corporate limits of Hammond, Ind., Whiting, East Chicago, and Gary."

The St. Louis-East St. Louis report in-

Continued on next left-hand page

Wear

takes its toll *each mile*

in the life of a superheater . . . time is not a factor in its life . . . it is mileage.

On a mileage basis, the cost is negligible for either new superheater units or superheater units remanufactured at our plant.

Write for our bulletin on the Elesco remanufacturing service for superheater units that have given their full mileage life.

ELESCO

THE SUPERHEATER COMPANY

Representative of American Throttle Company, Inc.

60 East 42nd Street, New York
Peoples Gas Building, Chicago

Canada:
The Superheater Company, Limited, Montreal

A-1136

Tangential Steam Dryers

Superheaters - Superheater Pyrometers - Exhaust Steam Injectors - Feed Water Heaters - American Throttles

cludes an extended discussion of the specific boundaries prescribed, but in general it includes that area bounded on the east by Fairmont City, Washington Park and East St. Louis, and on the west by University City and Webster Groves. This area includes approximately 80 per cent of the total population in the St. Louis metropolitan district as designated by the U. S. Bureau of the Census.

Car Men Hear Talk on Stores

Store departments of railroads were likened to the quartermaster's department of the army, and the stores equipment to supply depots, the ordnance department and the ammunition dump of military forces, in an address made to the Northwest Carmen's Association on March 1 by Howard Hayes, general storekeeper, Great Northern. One can very readily visualize the unfortunate results that would happen in military service, he said, if combat troops were not constantly supported by an efficient service of supply, and the same is true of railway operation.

Organization and methods in the service of supply of railroads, he pointed out, must be such as to place the department in a position to assume the total responsibility for ordering and maintaining the required supply of materials, and it was his opinion that a separate stores department, supervised and attached to a purchasing agent reporting directly to general executives of the railroad, is the best type of organization for the purpose, because it fixes responsibility and permits control over the available supply of materials without bias or influence. Mr. Hayes favored the concentration of material at one or more locations in place of scattering it over the railroad. Concentration, he pointed out, gives more flexibility in distribution and increases the availability of limited stocks by making it possible to organize the supply work so that one piece of material in a central location will give as much protection as five or six items of the same material stored in less accessible locations.

Shop delivery, Mr. Hayes considered, is strictly a store department responsibility. The material required for repairs to equipment, he said, should be kept as close to the job as possible. The methods followed must necessarily be determined by the importance of the locality, the volume of business handled and the size of the force engaged in the repair work; but at major locations, deliveries to the shops by store forces give the most economical and satisfactory results. The stores, however, must have co-operation in determining the requirements, checking stock for obsolescence and surplus and in keeping repair tracks free from obstructions to material handling. With the help and co-operation of the using departments, he stated, the delays and inconvenience that increase the cost of equipment maintenance can be largely eliminated. Purchases and stores, he concluded, are receiving more scrutiny as the costs of material and labor increase, and it is the responsibility of both supply and consuming departments to increase the economy and efficiency with which materials are handled.

Equipment and Supplies

LOCOMOTIVES

THE RICHMOND, FREDERICKSBURG & POTOMAC has ordered six locomotives of the 4-8-4 type, from the Baldwin Locomotive Works.

THE NEW YORK, NEW HAVEN & HARTFORD has under consideration the question of purchasing from six to ten electric locomotives of the 4-6-6-4 type.

THE CHINESE MINISTRY OF RAILWAYS is inquiring for from 40 to 65 locomotives of the 2-8-2 type, and 10 of the 2-8-4 type. Chang Kung-Chuan is minister of railways, Nanking, China.

THE BANGOR & AROOSTOOK has ordered five Consolidation (2-8-0) type locomotives from the American Locomotive Company. This company was reported in the *Railway Age* of April 17 as contemplating the purchase of this equipment.

THE NATIONAL RAILWAYS OF MEXICO have ordered 18 locomotives from the American Locomotive Company. These include eight articulated locomotives of the 2-6-6-2 type, to have 18-in. by 30-in. cylinders and weigh 410,000 lb. in working order; 10 locomotives of the 4-6-4 type, to have 22½-in. by 28-in. cylinders and weigh 300,000 lb. in working order. Inquiry for this equipment was reported in the *Railway Age* of March 13.

THE CHICAGO ROCK ISLAND & PACIFIC has been authorized by the Federal District Court at Chicago to lease for 7 years, with the right to purchase, ten 100-ton 600 hp. Diesel-electric switching locomotives from the Electro-Motive Corporation. These locomotives, having a value of $700,000 will probably be used at Des Moines, Iowa, Kansas City, Mo., Peoria, Ill., Rock Island, Joliet and Chicago. Delivery will begin May 1.

FREIGHT CARS

THE UNION PACIFIC is inquiring for 1000 50-ton gondola cars.

THE LOUISIANA & ARKANSAS, reported in the *Railway Age* of February 13 as having ordered 100 box cars from the Pullman-Standard Car Manufacturing Company, has increased the number to 150 and in addition has ordered 50 70-ton steel hopper cars from the General American Transportation Corp.

THE NATIONAL RAILWAYS OF MEXICO has ordered 250 30-ton narrow-gage box cars, 150 50-ton standard-gage box cars and 250 car sets of 40-ton standard-gage trucks from the Pullman-Standard Car Manufacturing Company, 175 standard-gage box cars from the American Car & Foundry Company and 175 standard-gage box cars from the General American Transportation Corporation.

THE TENNESSEE COAL, IRON & RAILROAD COMPANY has ordered 19 70-ton ore cars and 21 70-ton gondola cars from the Pullman-Standard Car Manufacturing Company. The 25 70-ton gondola cars ordered by the Chicago, Burlington & Quincy and the same number ordered by the Birmingham & Southern from the Pullman-Standard Car Manufacturing Company early this year are being delivered this week.

PASSENGER CARS

THE CANADIAN NATIONAL has ordered 50 air-conditioned passenger coaches from the Canadian Car & Foundry Company, Montreal, Que. These coaches will have a seating capacity of 64, reclining seats, high tensile steel bodies, turtle back roof, and six wheel trucks. Inquiry for this equipment was reported in the *Railway Age* of March 6.

IRON AND STEEL

THE RICHMOND, FREDERICKSBURG & POTOMAC has ordered 3,100 tons of 131-lb. rail, from the Bethlehem Steel Company.

THE COLORADO & WYOMING is inquiring for 395 tons of rails, 50,000 tie plates, 575 kegs of spikes, 150 kegs of bolts, and 1,100 angle bars.

Supply Trade

L. A. Bedard has been appointed manager of sales of the **Mt. Vernon Car Manufacturing Company,** Mt. Vernon, Ill.

S. M. D. Clapper, president of the **General Refractories Company,** Philadelphia, Pa., on April 16, was elected chairman of the board, and **Floyd L. Greene,** executive vice-president, was elected president.

Wade H. Burleson, formerly assistant manager of the Power Utilities Department of the **Ohio Brass Company,** Mansfield, Ohio, has been appointed manager of the department, succeeding **M. M. Kenneally,** resigned. In his new position, Mr. Burleson will supervise the sales of all types of O-B insulators, insulator fittings and hardware, and bushings.

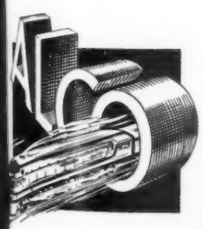
J. E. Peterson has been elected vice-president and assistant to the president of the **General Machinery Corporation.** Mr. Peterson has his headquarters at Hamilton, Ohio; he has been connected with the company 22 years, having joined the Hooven, Owens, Rentschler Company, a division of the General Machinery Corporation, in 1914.

The Timken Roller Bearing Company, Canton, Ohio, has appointed district managers in charge of steel sales for its Steel and Tube Division as follows; **W. F. Anderson,** St. Louis, Mo.; **M. C. Bellamy,** Seattle, Wash.; **G. W. Curtis,** Milwaukee, Wis.; **H. V. Fleming,** Birming-

Continued on next left-hand page

On March 20th, 1937, after less than 22 months of operation, the HIAWATHA carried its 500,000th revenue passenger.

Officials estimate the HIAWATHA trains earned approximately $1,000,000 net in 1936.



AMERICAN LOCOMOTIVE COMPANY

30 CHURCH STREET · NEW YORK · N·Y

ham, Ala.; **B. E. Keifer,** Cincinnati, Ohio; **H. D. Robb,** Pittsburgh, Pa., and **B. M. Tinlin,** Huntington, W. Va.

Cyrus L. Philipp has been elected vice-president of the **General American Transportation Corporation,** with headquarters at Milwaukee, Wis., and will continue in charge of the Union Refrigerator Transit division of the General American's operation. Mr. Philipp was president of the Union Refrigerator Transit Company until its absorption in the parent company.

I. D. Applegate has joined the staff of the **Ideal Commutator Dresser Company,** Sycamore, Ill. He will be in charge of engineering, design and development of automatic voltage, current and speed regulators. This line was recently acquired by Ideal through the purchase of the Marshall Electric Company, Elkhart, Ind. Mr. Applegate was formerly connected with the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.

O. J. Parks has been appointed general superintendent of the tank car repair department of the **General American Transportation Corporation,** with headquarters in Chicago, to succeed **I. A. Eakins,** who has retired after many years' service with this company. Mr. Parks was employed by the Pennsylvania railroad in its car department prior to coming to the General American Transportation Corporation 22 years ago, since which time he has served as general superintendent and manager of sales in the freight car department, and is now taking over the supervision of maintenance of all tank cars of the company. **Richard M. Lamport,** erroneously reported as Ramport in the *Railway Age* of April 3, has been appointed sales representative, with headquarters in Chicago, to assist in the sales of freight cars and special car equipment. Mr. Lamport came to this company five years ago, after his graduation from Bowdoin college.

OBITUARY

Frank E. Case, who retired in 1933 as assistant to the engineer of the transportation department of the General Electric Company, died on April 17, at his home in Hartford, Conn., at the age of 68 years. He held 104 patents in the railway transportation field, and was active in improving electrical transportation facilities up to the time of his retirement. Mr. Case started work with the Thomson-Houston Electric Company shortly before the formation of the General Electric Company as a draftsman, at Lynn, Mass., in 1891. In the following year he was a student in the test course there, and in 1894 he was transferred to the engineering department at Schenectady, N. Y. After three years in that department he was transferred to the railway engineering department at Schenectady. In 1927 he moved to Erie, Pa., continuing his work in that department, and in 1930 was appointed assistant to the engineer of the transportation department.

Construction

CHICAGO, BURLINGTON & QUINCY.—A contract has been awarded to the Ogle Construction Company, Chicago, for the construction of a 600-ton capacity structural steel three-track locomotive coaling station and sand handling plant at Lincoln, Neb.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—The Illinois Commerce Commission has granted the application of the City of Chicago for permission to construct a subway under the tracks of the Milwaukee at Austin avenue. The estimated cost of this subway, which will extend under 43 tracks, is $1,203,985, of which $363,000 has been obtained by the city in the form of a federal grant. The remainder of the cost of construction will be borne by the city.

LEHIGH VALLEY.—Contracts have been given to the Serafini Construction Company, Binghamton, N. Y., for construction work and to the Bethlehem Steel Company for furnishing the structural steel in connection with the elimination of grade crossings at Lodi, N. Y.

LEHIGH VALLEY.—Plans, specifications and an estimate of cost of $158,200, exclusive of land and property damages, for the elimination of the grade crossing of this road on the Honeoye Falls-Pittsford town line county highway in the town of Mendon, N. Y., have been approved by the New York Public Service Commission. The commission authorized the railroad to do certain work in connection with the elimination at actual cost by direct employment of labor and purchase of materials, limiting the cost to $9,675. A contract at $20,035 was let to the Phoenix Bridge Company, New York City, for furnishing and erecting structural steel in connection with the elimination of this crossing. The Lehigh Valley will receive bids for construction work on April 28.

PENNSYLVANIA.—Contracts have been let as follows: To F. W. Smith & Co., Cleveland, Ohio, for the reconstruction of the viaduct at Silver Creek, N. Y.; to the Dravo Corporation, Pittsburgh, Pa., for the removal of Piers 3 and 5 at Trenton, N. J.; to McCloskey & Co., Philadelphia, Pa., for the reconstruction of the Dock street freight station, Philadelphia; to the Industrial Brownhoist Company, Bay City, Mich., for two ore handling machines at Erie, Pa.; to W. F. Trimble & Co., Pittsburgh, for the construction of a river-rail transportation storage and locker building at Conway, Pa.

PENNSYLVANIA.—Contracts have been awarded to the Ogle Construction Company, Chicago, for the construction of a 750-ton capacity reinforced concrete electrically-operated four-track locomotive coaling station and sand-handling plant at Harrisburg, Pa., and for the construction of a 150-ton capacity reinforced concrete single-track locomotive coaling station and sand-handling plant and a single-track locomotive ash-handling plant at South Amboy, N. J.

Financial

ALABAMA & FLORIDA.—*Acquisition.*—The Interstate Commerce Commission, Division 4, has authorized this company to acquire and operate the property formerly owned by the Alabama, Florida & Gulf.

ARIZONA & SWANSEA.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for authority to abandon its line and the operation of the line extending from Bouse, Ariz., to Swansea, 21.1 miles.

BELT RAILWAY OF CHICAGO.—*Annual Report.*—The 1936 annual report of this company shows net income, after interest and other charges, of $342,174, as compared with net income of $181,625 in 1935, an increase of $160,548. Selected items from the income statement follow:

	1936	1935	Increase or Decrease
RAILWAY OPERATING REVENUES	$5,372,633	$4,654,487	+$718,145
Maintenance of way	333,345	305,148	+28,196
Maintenance of equipment	368,599	363,858	+4,740
Transportation—Rail	2,204,836	1,985,940	+218,895
TOTAL OPERATING EXPENSES	3,070,142	2,767,365	+302,777
Operating ratio	57.14	59.46	−2.32
NET REVENUE FROM OPERATIONS	2,302,490	1,887,121	+415,368
Railway tax accruals	714,962	460,408	+254,554
Railway operating income	1,587,527	1,426,713	+160,814
Net rents	359,772	350,295	+9,476
NET RAILWAY OPERATING INCOME	1,947,299	1,777,008	+170,290
Non-operating income	85,643	127,486	−41,842
TOTAL INCOME	2,032,943	1,904,495	+128,448
Rent for leased roads and equipment	1,687,078	1,714,908	−27,829
Interest on funded debt	.....	68	−68
TOTAL FIXED CHARGES	1,688,918	1,715,085	−26,166
NET INCOME	$342,174	$181,625	+$160,548

CHESAPEAKE & OHIO.—*Consolidation.*—The Interstate Commerce Commission has assigned for hearing on May 13 the application of this company to acquire direct control of the New York, Chicago & St. Louis and the Erie.

CHESAPEAKE & OHIO.—*Stock.*—This company has asked the Interstate Commerce Commission to modify its order authorizing it to issue $15,315,500 of preference stock so as to permit the company to substitute a like amount of uncapitalized and capitalizable investment in equipment in lieu of a like amount of expenditures made for additions and betterments. The stock was issued as a dividend.

DELAWARE & HUDSON.—*Sale of Boat Line.*—This company has disposed of its stock interest in the Champlain Transportation Company which formerly operated steamboats on Lake Champlain.

DENVER & RIO GRANDE WESTERN.—*Equipment Trust Certificates.*—Trustees of this road have been authorized by the In-

Continued on next left-hand page

PUT GOODYEARS ON YOUR
FREIGHTERS
-and Watch your Mileage Jump!

MORE MILES AT LESS COST!

ASK THE MEN in your own line of business—operating trucks just as you do—about tires.

More of them than not will start right in telling you of exceptional mileage records on Goodyear Tires. That's why—

More tons are hauled on Goodyear Truck Tires than on any other kind.

Goodyear builds a type and size of truck tire for every trucking need—for every purse.

It's a safe prediction you'll save money if you let the Goodyear dealer near you show you the Goodyear Truck Tire best fitted for your work.

Read the money saving features at the right. Then put Goodyears on your trucks and —*Watch Your Mileage Jump!*

THE GOODYEAR TIRE & RUBBER CO., INC, AKRON, OHIO

MONEY SAVING FEATURES

- Patented Pre-Shrunk Supertwist Cord Construction for greater body strength, protection against blowouts.
- Chemically-toughened, heat-resisting rubber in both tread and body.
- Cooler running High Profile Construction.
- High Shoulder Tread Shape for slower, more even wear.
- Braided Wire Beads to protect against swaying loads.

There's a GOODYEAR BATTERY now!

GOODYEAR TRUCK TIRES

terstate Commerce Commission, Division 4, to assume liability for $2,175,000 of 3¼ per cent equipment trust certificates. The issue, which will mature in 15 equal annual installments from 1938 to 1952, has been awarded to Freeman & Company, New York, making the annual rate of interest approximately 3.6191 per cent.

DENVER & RIO GRANDE WESTERN.—*New Directors.*—Darwin S. Barrett, Jr., Cleveland, Ohio, and M. J. Curry, vice-president, assistant secretary and assistant treasurer of the Western Pacific, at New York, have been elected directors of the D. & R. G. W. They succeed the late O. P. Van Sweringen and Arthur W. Loasby, New York.

ILLINOIS CENTRAL.—*Equipment Trust Certificates.*—This company has applied to the Interstate Commerce Commission for authority to assume liability for $7,050,000 of 3 per cent equipment trust certificates, maturing in 30 equal semi-annual installments of $235,000 on September 1, from 1937 to 1951.

INDIANAPOLIS UNION.—*Bonds.*—The Interstate Commerce Commission, Division 4, has authorized this company to issue $3,150,000 of refunding and improvement 3½ per cent mortgage bonds, series B, to be guaranteed jointly by the Pennsylvania, the New York Central and the Cleveland, Cincinnati, Chicago & St. Louis. Proceeds of the bonds, which will mature March 1, 1986, will be applied to the redemption of the applicant's general and refunding mortgage 5 per cent gold bonds, series B. The issue has been awarded to Halsey, Stuart & Company, New York, at 98.078, which will make the annual interest cost approximately 3.58 per cent.

MISSOURI PACIFIC. — *Van Sweringen Suit.*—Trustee Guy Thompson has filed suit in Common Pleas Court at Cleveland, Ohio, against the executors of the late O. P. Van Sweringen and five of the road's directors charging use of the company's own funds to purchase its stock, alleging that the money so expended was charged as a loan to one of the road's subsidiaries. An accounting with relief in equity is asked from the defendants.

MISSOURI PACIFIC. — *Reorganization.* — The Interstate Commerce Commission, Division 4, has granted authority to a committee of three to solicit authorizations to represent holders of first mortgage 4 per cent bonds of the Little Rock & Hot Springs Western in the reorganization proceedings of this company. The committee is composed of Roland C. Behrens, Oliver M. Clifford, and A. F. Greer.

PENNSYLVANIA.—*Equipment Trust Certificates.*—This company has applied to the Interstate Commerce Commission for authority to assume liability for $7,740,000 of 3 per cent equipment trust certificates, maturing in 15 equal annual installments on May 1, from 1938 to 1952.

PERE MARQUETTE. — *Equipment Trust Certificates.*—The Interstate Commerce Commission, Division 4, has authorized this road to assume liability for $1,940,000 of 2¾ per cent equipment trust certificates. The issue, which will mature in 10 equal annual installments from 1938 to 1947, has been awarded to a banking group comprised of Brown, Harriman & Company, Inc., Blyth & Company, Inc., and Laurence M. Marks & Co.

RICHMOND, FREDERICKSBURG & POTOMAC.—*Annual Report.*—The 1936 annual report for this road shows net income, after interest and other charges, of $704,160, an increase of $459,354 as compared with net income in 1935. Selected items from the income statement follow:

	1936	Increase or Decrease Compared with 1935
RAILWAY OPERATING REVENUES	$7,638,028	+$1,130,614
Maintenance of way	716,186	+21,251
Maintenance of equipment	1,536,550	+67,578
Transportation	2,868,930	+185,515
TOTAL OPERATING EXPENSES	5,754,395	+346,880
Operating ratio	75.34	−7.76
NET REVENUE FROM OPERATIONS	1,883,633	+783,733
Railway tax accruals	535,542	+227,088
Railway operating income	1,348,091	+556,645
Hire of equipment—Dr.	421,491	+80,644
Joint facility rents—Dr.	80,217	+5,475
NET RAILWAY OPERATING INCOME	846,382	+470,525
Non-operating income	182,314	−12,667
GROSS INCOME	1,028,696	+457,857
Interest on funded debt	311,135	−234
TOTAL DEDUCTIONS FROM GROSS INCOME	324,536	−1,496
NET INCOME	$704,160	+$459,354

SOUTHERN.—*Equipment Trust Certificates.*—The Cincinnati, New Orleans & Texas Pacific has applied to the Interstate Commerce Commission for authority to assume liability for $6,810,000 of 2½ per cent equipment trust certificates, maturing in 15 equal annual installments on April 15, from 1938 to 1952. The Alabama Great Southern has applied for authority to assume liability for $3,825,000 of 2¾ per cent equipment trust certificates, maturing in 15 equal annual installments of $255,000 on April 15, from 1938 to 1952.

WABASH.—*Interest Payment.*—An application of receivers of the Wabash for an order authorizing payment of interest due May 1 on first mortgage bonds has been denied by the federal district court. The court directed that current revenues be applied to the elimination of accrued maintenance. The court also ordered security holders of the road to present a plan of reorganization within 60 days through their respective trustees' committees and other representatives.

Average Prices of Stocks and Bonds

	Apr. 20	Last week	Last year
Average price of 20 representative railway stocks..	59.02	58.13	46.85
Average price of 20 representative railway bonds..	82.74	81.09	79.68

Dividends Declared

Albany & Vermont.—$1.50, payable May 15 to holders of record April 30.

Nashua & Lowell.—$3.50, semi-annually, payable May 1 to holders of record April 15.

Wheeling & Lake Erie.—$4.00 Prior Preferred, $1.00, quarterly; 5½ Per Cent Preferred, $1.38, quarterly, both payable May 1 to holders of record May 24.

Railway Officers

FINANCIAL, LEGAL AND ACCOUNTING

W. L. Hudson, assistant auditor of the Chicago & Western Indiana and the Belt Railway of Chicago, has been elected auditor to succeed **A. R. Barton,** deceased. **I. A. Schilke,** clerk in the auditor's office, has been elected assistant auditor to succeed Mr. Hudson. The offices of Mr. Hudson and Mr. Schilke are located at Chicago.

OPERATING

John M. Henry, assistant chief of motive power (locomotive) of the Pennsylvania, with headquarters at Philadelphia, Pa., has been appointed assistant to the general manager of the Western Region, with headquarters at Chicago, to succeed the late **Paul L. Grove.** Mr. Henry's appointment became effective on April 16.

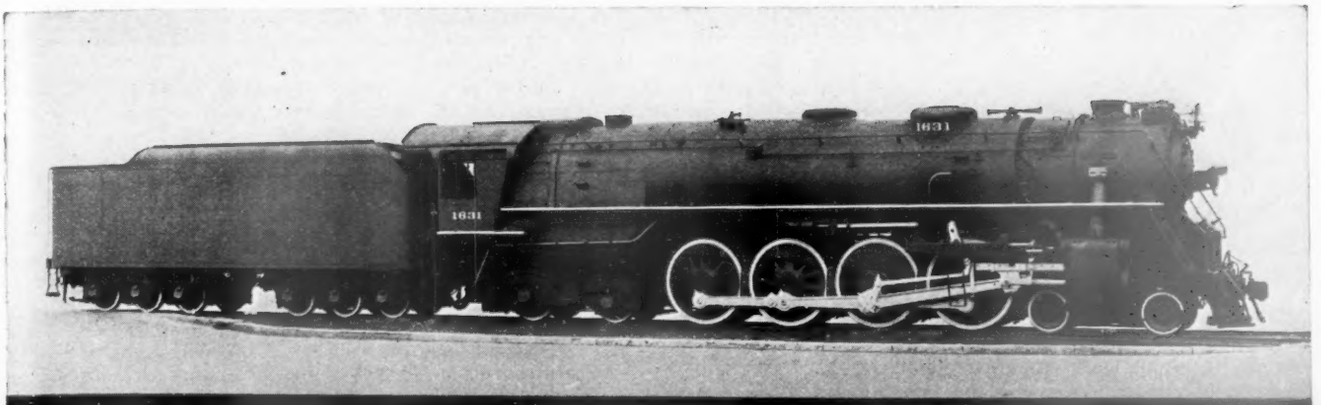
H. H. Sparling, rule instructor and inspector of dispatchers of the Canadian National, with headquarters at Winnipeg, Man., has been appointed superintendent of transportation of the Alberta district, with headquarters at Edmonton, Alta., succeeding **W. A. Kirkpatrick,** who has been appointed superintendent of car service at Winnipeg.

H. H. Larson has been appointed superintendent of the newly-created Los Angeles division of the Union Pacific, with headquarters at Los Angeles, Cal. **H. E. Shumway,** trainmaster at Grand Island, Neb., has been promoted to assistant superintendent, with headquarters at Omaha, Neb., to succeed **A. E. Stoddard,** who has been transferred to the Wyoming division, with headquarters at Cheyenne, Wyo., to replace **B. O. Wedge,** whose appointment as superintendent at Green River, Wyo., was reported in the *Railway Age* of April 17. **F. G. Clark** has been appointed trainmaster at Grand Island to replace Mr. Shumway.

ENGINEERING AND SIGNALING

A. F. Maischaider, engineering assistant to the general manager of the Cleveland, Cincinnati, Chicago & St. Louis (Big Four), whose promotion to principal assistant engineer, with headquarters at Cincinnati, Ohio, was reported in the *Railway Age* of April 10, has been connected with this company for nearly 35 years. He was born on October 6, 1882, at Chicago and received his technical education at Purdue University, graduating in 1902. In June of the same year, Mr. Maischaider entered railway service with the Big Four as an assistant engineer on construction. Two months later he was appointed resident engineer on construction and in November, 1907, he was advanced to assistant division engineer. Five years later Mr. Maischaider was further promoted to division engineer and in May, 1924, he was made engineering assistant to the general

Continued on next left-hand page



MODERN LOCOMOTIVES Need This Modern Brake—the No. 8-ET Equipment

THE No. 8-ET Equipment, applied to the most modern locomotives, is the satisfactory answer to the locomotive brake problem for steam and electrified railroad service . . . Its functional characteristics and operating advantages are completely disclosed in our Descriptive Catalogue 2052, a copy of which may be had for the asking. » » » » »

WESTINGHOUSE AIR BRAKE CO.

GENERAL OFFICE AND WORKS . . . WILMERDING, PA.

(1279)

manager, which position he held until his recent appointment as principal assistant engineer.

TRAFFIC

G. E. Gustafson, general agent for the New York, Ontario & Western, with headquarters at Chicago, has been promoted to the newly-created position of general western freight agent, with the same headquarters, effective April 15.

B. W. Peterson, traveling freight agent for the Chesapeake & Ohio with headquarters at Minneapolis, Minn., has been promoted to general agent with the same headquarters, to succeed **A. B. Long,** who has been assigned to other duties because of ill health.

M. G. Dale, traveling freight and passenger agent for the St. Louis-San Francisco at Philadelphia, Pa., has been promoted to general agent, with the same headquarters, to succeed **W. O. Dodge,** who has been appointed general eastern agent at New York, as reported in the *Railway Age* of March 20.

Frank M. Ware, division passenger agent on the Pennsylvania at Cincinnati, Ohio, has been promoted to the newly-created position of assistant general passenger agent, with headquarters at St. Louis, Mo. **Milton N. Luthi,** division passenger agent at New York, has been promoted to the newly-created position of assistant general passenger agent at Chicago. These appointments became effective on April 16.

Leo E. Clarahan, whose appointment as general freight agent on the Wabash, with headquarters at St. Louis, Mo., was reported in the *Railway Age* of April 10, has been identified with this road for the last 35 years except for a period during the World War. He was born on August 1, 1891, at Harper, Iowa, and received his higher education at the University of Missouri. He entered railway service on August 10, 1912, with the Wabash as a freight trucker and clerk in the local freighthouse at Columbia, Mo. On August 10, 1913, he was advanced to chief clerk in the division freight office at Moberly, Mo., holding this position until March, 1915, when he was transferred to the division freight office at Des Moines, Iowa. Eight months later Mr. Clarahan was transferred to the office of the general freight agent at St. Louis, where he remained until July, 1917, when he left railroad service to join the United States Navy. In July, 1919, he returned to the Wabash as traveling freight inspector at St. Louis, holding this position until March, 1920, when he was advanced to division freight agent at Des Moines. Mr. Clarahan was transferred to Omaha, Neb., in June, 1921, and six years later was appointed general industrial agent at St. Louis. In February, 1933, he was made assistant general freight agent, with the same headquarters. He was holding this position at the time of his recent appointment as general freight agent at St. Louis.

L. E. Clarahan

MECHANICAL

E. Y. Nitrauer, division car foreman on the Erie at Marion, Ohio, has been appointed shop superintendent of the Port Jervis (N. Y.) car shop, to succeed **M. H. Quinn,** who has retired.

F. D. Veazey, general foreman for the Norfolk & Western, with headquarters at Columbus, Ohio, has been appointed assistant master mechanic of the Radford and Shenandoah divisions, with headquarters at Roanoke, Va.

L. W. Downey, who has been connected with the Electro-Motive Corporation, La Grange, Ill., has been appointed to the newly-created position of supervisor of automotive equipment of the Chicago, Rock Island & Pacific, with headquarters at Chicago. Mr. Downey will have direct jurisdiction over the maintenance of Diesel and other automotive equipment.

C. K. Steins, master mechanic of the Maryland and Baltimore divisions of the Pennsylvania, with headquarters at Wilmington, Del., has been appointed assistant chief of motive power (locomotive), with headquarters at Philadelphia, Pa., succeeding **J. M. Henry,** whose appointment as assistant to the general manager of the western region is noted elsewhere in these columns. **F. M. Waring,** engineer of tests at the Altoona, Pa., works, has been appointed resident inspector, test department, with headquarters at Philadelphia, succeeding **W. R. Garden,** retired. **L. B. Jones,** master mechanic of the Columbus, Cincinnati and Toledo divisions, has been appointed engineer of tests at Altoona, succeeding Mr. Waring. **A. O. Geertz,** assistant master mechanic at Altoona, has been appointed assistant engineer motive power, office of the superintendent motive power, Western Pennsylvania division. **C. T. Hunt,** acting assistant master mechanic at Wilmington, has been appointed assistant engineer motive power, office of the superintendent motive power of the Southern division. **C. A. Shull,** master mechanic of the Philadelphia Terminal division, has been transferred in the same capacity to the Western Pennsylvania division. **A. W. Byron,** master mechanic of the Williamsport division, has been transferred in the same capacity to the Philadelphia Terminal division. **C. A. Wilson,** master mechanic of the Atlantic division, has been transferred in the same capacity to the Williamsport division. **J. W. Leonard,** assistant master mechanic at Harrisburg, has been appointed master mechanic of the Atlantic division and of the Pennsylvania-Reading Seashore Lines. **H. T. Cover,** master mechanic of the Eastern division, has been transferred in the same capacity to the Maryland and Baltimore divisions. **J. L. Marks, R. J. Conrad,** and **C. W. Whistler,** enginehouse foremen, have been appointed assistant master mechanics of the Middle division, the Philadelphia division, and the Maryland and Baltimore divisions, respectively.

OBITUARY

George S. Jessop, assistant general manager of hotels of the Canadian National, died on April 19 at the Civic Hospital, Ottawa, Ont.

Jacob E. Mechling, formerly superintendent of motive power on the Pennsylvania, with headquarters at Indianapolis, Ind., died at his home in Indianapolis on April 15. Mr. Mechling retired in 1925.

C. A. Bemler, assistant general adjuster of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Dubuque, Iowa, died at that point on April 15 at the age of 77 years.

W. J. Sherman, who held important engineering positions with a number of carriers, died on April 15 at Toledo, Ohio, at the age of 82 years. Among the railroad positions which Mr. Sherman had held were those of chief engineer of the Louisville, Evansville & St. Louis (now part of the Southern) from 1881 to 1884, chief engineer of the Gulf, Colorado & Santa Fe (1884-1888), and chief engineer of the Wheeling & Lake Erie (1896-1897).

Augustus T. Owen, superintendent of transportation of the Reading, with headquarters at Philadelphia, Pa., died at his home in Norristown, Pa., on April 13, after several weeks' illness, at the age of 67. Mr. Owen was born at Norristown on April 6, 1870, and entered railway service in July, 1886, as clerk with the Philadelphia & Reading (now Reading), at Philadelphia. He served as yardmaster successively at West Falls, Pa., and Pencoyd from July, 1900, to 1902, then becoming agent successively at Pencoyd and Wayne Junction Transfer until 1918. In the latter year he became supervising agent of the Philadelphia division and then served from 1919 to 1921 as superintendent of stations and transfers, becoming assistant superintendent of transportation in 1921. Mr. Owen was appointed superintendent of transportation in 1922.

CAR PARKING FACILITIES have now been made available at over 550 stations on the Great Western of Great Britain for the convenience of passengers. A charge of one shilling a day is made, but for the regular passengers season tickets are available at reduced rates.

Annual Report—New York Central Railroad Company

To the Stockholders of
THE NEW YORK CENTRAL RAILROAD COMPANY:

The Board of Directors herewith submits its report for the year ended December 31, 1936, with statements showing the income and the financial condition of the company.

The Year's Business

Operating revenues amounted to $361,063,871.95, an increase of $51,033,100.83, resulting from a continuing improvement in business.

Revenue freight handled amounted to 125,948,268 tons, an increase of 21,465,800 tons (20.54%). Freight revenue amounted to $257,714,419.37, an increase of $39,501,590.79 (18.10%). Included in freight revenue is $11,367,053, and in certain other revenues $444,254, a total in operating revenues of $11,811,307 of charges under emergency rates authorized by the Interstate Commerce Commission in ex parte 115, which rates are not effective after January 1, 1937.

Some of the commodities in which the larger increases occurred with increased gross revenue therefrom (before deductions for absorbed switching charges, overcharges, etc.) were:

	Tons	Increase	Revenue	Increase
Bituminous coal	53,384,688	7,031,557	$62,171,818	$8,151,297
Iron ore	4,741,176	2,005,081	2,591,172	1,224,125
Products of mines*	4,054,864	1,384,558	4,203,142	1,072,157
Lumber, shingles and lath	1,885,191	477,807	4,247,297	984,151
Iron and steel articles rated 5th class	4,138,839	1,004,263	13,153,246	3,567,710
Automobiles, auto trucks and parts	2,508,563	316,460	18,359,237	2,739,342
Manufactures and miscellaneous*	11,069,779	2,112,792	41,225,619	7,891,627

* Not otherwise specified.

The Company carried 48,269,076 revenue passengers, an increase of 3,887,617 (8.76%). Interline passengers increased 511,329 (27.19%), local passengers increased 3,362,517 (29.20%) and commutation passengers increased 13,771 (0.04%). Passenger revenue amounted to $62,575,824.21, an increase of $7,284,954 (13.18%).

Pursuant to an order of the Interstate Commerce Commission, the passenger fare base was on June 1st, 1936, reduced from 3.6c. per mile to 2c. per mile for travel in coaches and to 3c. per mile for travel in Pullman cars. The Pullman surcharge, which accrued to the railroads, and which represented approximately one-half cent per mile, was also discontinued as of that date. This, together with the general improvement in business conditions, while resulting in a very substantial increase in the number of passengers using rail service has not, however, reflected a proportionate increase in passenger revenues.

Net railway operating income was $45,278,625.64, an increase of $9,313,915.11.

Net income for the year which amounted to $8,933,174.98 was carried to the credit of profit and loss.

Income Account for the Year

Including Boston & Albany Railroad, Ohio Central Lines, Michigan Central Lines, Big Four Lines, and All Other Leased Lines

	Year ended Dec. 31, 1936	Year ended Dec. 31, 1935	+Increase or −Decrease
OPERATING INCOME	11,218.81 *miles operated*	11,214.92 *miles operated*	3.89 *miles*
RAILWAY OPERATIONS			
Railway operating revenues	$361,063,871.95	$310,030,771.12†	+$51,033,100.83
Railway operating expenses	268,830,436.27	237,197,454.76	+31,632,981.51
NET REVENUE FROM RAILWAY OPERATIONS	$92,233,435.68	$72,833,316.36†	+$19,400,119.32
Percentage of expenses to revenues	(74.46)	(76.51†)	(−2.05)
Railway tax accruals (Note A)	$30,812,037.47	$20,619,431.57	+$10,192,605.90
RAILWAY OPERATING INCOME	$61,421,398.21	$52,213,884.79	+$9,207,513.42
Equipment rents, net debit	$12,424,247.54	$12,460,314.96†	−$36,067.42
Joint facility rents, net debit	3,718,525.03	3,788,859.30	−70,334.27
NET RAILWAY OPERATING INCOME	$45,278,625.64	$35,964,710.53†	+$9,313,915.11
MISCELLANEOUS OPERATIONS			
Revenues	$655,614.14	$615,952.29	+$39,661.85
Expenses and taxes	559,237.85	562,136.19	−2,898.34
MISCELLANEOUS OPERATING INCOME	$96,376.29	$53,816.10	+$42,560.19
TOTAL OPERATING INCOME	$45,375,001.93	$36,018,526.63†	+$9,356,475.30
NON-OPERATING INCOME			
Income from lease of road and equipment	$632,230.62	$1,153,098.53†	−$520,867.91
Miscellaneous rent income	3,471,037.79	3,305,336.43	+165,701.36
Miscellaneous non-operating physical property	1,225,304.13	918,241.62	+307,062.51
Separately operated properties—profit	695,861.99	614,399.60	+81,462.39
Dividend income	9,088,453.15	10,695,431.05	−1,606,977.90
Income from funded securities	5,098,429.53	5,395,958.56	−297,529.03
Income from unfunded securities and accounts	1,308,541.17	1,249,449.48	+59,091.69
Income from sinking and other reserve funds	114,102.06	160,123.16	−46,021.10
Miscellaneous income	175,887.66	142,417.41	+33,470.25
TOTAL NON-OPERATING INCOME	$21,809,848.10	$23,634,455.84†	−$1,824,607.74
GROSS INCOME	$67,184,850.03	$59,652,982.47†	+$7,531,867.56
DEDUCTIONS FROM GROSS INCOME			
Rent for leased roads and equipment	$26,707,626.73	$26,578,104.60†	+$129,522.13
Miscellaneous rents	572,321.91	623,016.90†	−50,694.99
Miscellaneous tax accruals	352,349.09	301,466.01†	+50,883.08
Separately operated properties—loss	7,509.04	7,448.25	+60.79
Interest on funded debt	28,777,854.14	28,549,102.04	+228,752.10
Interest on unfunded debt	1,656,069.37	3,455,938.69	−1,799,869.32
Maintenance of investment organization	.....	25,814.18	−25,814.18
Miscellaneous income charges	177,944.77	2,953.74*	+180,898.51
TOTAL DEDUCTIONS FROM GROSS INCOME	$58,251,675.05	$59,537,936.93†	−$1,286,261.88
NET INCOME	$8,933,174.98	$115,045.54	+$8,818,129.44
Equipment depreciation charges included in expenses (Note B)	$16,225,349	$16,664,076	−$438,727
Equipment retirement charges included in expenses	552,806	30,172	+522,634
Included in non-operating income and rent for leased roads and equipment are certain intercompany transactions representing credits and corresponding debits amounting to	$6,129,779	$6,355,145	−$225,366
Also included in non-operating income are items representing interest and dividends amounting to	$1,701,119	$1,646,697	+$54,422

received on securities of and advances to terminal and other railroad companies whose properties are jointly used by this Company, as to the major portion of which a like amount was paid by the Company to those companies as rental and included in Joint Facility Rents.

NOTE A.—The Company makes provision for taxes by accruals of monthly charges against income on the basis of best estimates available as to the amounts ultimately to be paid. As taxes are paid, adjustments are made in the charges to income in order to reflect in the income account the differences between accruals previously made and the amounts actually paid. For the year 1936 includes accruals for Excise Tax in connection with Railroad Retirement Act (now being contested) and Federal and State Social Security Taxes in the aggregate amount of $6,499,788.

NOTE B.—Beginning with the year 1935 rates for depreciation were changed to conform with the following composite rates approved by the Interstate Commerce Commission for the New York Central under Docket No. 15,100: Steam locomotives 3.11%, Other locomotives 2.62%, Freight train cars 2.72%, Passenger train cars 2.35%, Floating equipment 2.50%, Work equipment 3.73% and Miscellaneous equipment 6.89%.

* Credit. † Revised for purposes of comparison.

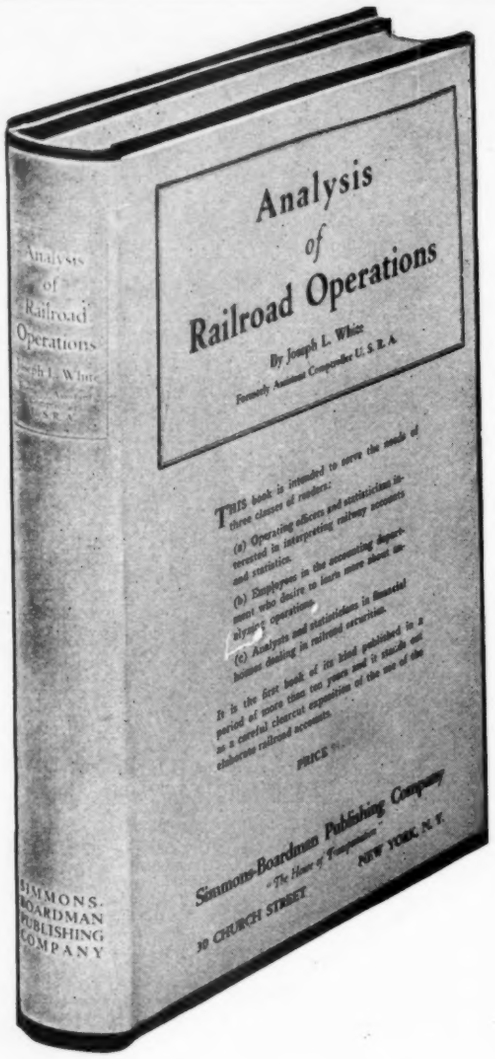
Profit and Loss Account

BALANCE TO CREDIT OF PROFIT AND LOSS, DECEMBER 31, 1935		$195,968,343.44
ADDITIONS:		
Net income for the year 1936	$8,933,174.98	
Credits from retired road and equipment	353,448.55	
Delayed income credits	9,061.84	
Donations	17,537.66	
Miscellaneous credits	1,810,517.74	11,123,740.77
		$207,092,084.21
DEDUCTIONS:		
Surplus appropriated for investment in physical property	$153,565.79	
Debt discount extinguished through surplus	1,676,929.52	
Debits from retired road and equipment	14,406,946.27*	
Miscellaneous debits	1,726,260.98	17,963,702.56
BALANCE TO CREDIT OF PROFIT AND LOSS, DECEMBER 31, 1936		$189,128,381.65

* Represents ledger value, less net salvage recovered, of roadway property not required for transportation service retired during the year and charged directly to Profit and Loss Account.

For the Board of Directors,
F. E. WILLIAMSON, President.

[Advertisement]



373 pages, 6 x 9 inches, index, $4.00

For the Interpretation of Railroad Statistics You Should Have a Copy of

Analysis of Railroad Operations

By J. L. WHITE

Formerly Assistant Comptroller, United States Railroad Administration

This book describes how accounting department figures should be used in the study of railroad operating results. A four page sample work sheet is furnished for setting down basic statistics and significant averages of a railroad over a given period. The author shows how these figures reflect the various activities of a railroad, the operating efficiency of the road as a whole or of any of its departments. Classifications of the Interstate Commerce Commission are given in full in the appendix and frequent and detailed references are made to them in the text.

Statisticians and the statistical departments of financial houses dealing in railroad securities can with the aid of this book make a more careful analysis of the earning power of individual roads and of the actual value of their stocks and bonds.

Accountants will find the vast fund of information contained in railroad accounting records and statistics made more available and understandable.

Students of railroad operations without accountancy training will be more able to understand railroad financial reports, as the author stresses interpretation rather than preparation of accounting statistics.

Simmons-Boardman Publishing Corporation,
Book Department,
30 Church Street, New York, N. Y.

Send me postpaid for Ten Days' Free Examination a copy of Analysis of Railroad Operations. I will remit the list price or return it within that time.

NAME .....

ADDRESS .....

CITY ..... STATE.....

ROAD ..... POSITION.....

Postage prepaid and books sent on approval to retail purchasers in U. S. and Canada only. R. A. 4-24-37

Contents

The Income Statement—Railway Operating Revenues—Statistics of Freight and Passenger Service—Analysis of Fluctuations in Operating Revenues—Railway Operating Expenses—Analysis of Fluctuation in Railway Operating Expenses—Analysis of Fluctuations in Maintenance of Way and Structures Expenses—Unit Costs of Maintaining Fixed Property—Analysis of Fluctuations in Maintenance of Equipment Expenses—Analysis of Account 314—Freight Train Cars—Repairs—Unit Costs of Maintaining Equipment—Analysis of Fluctuations in Transportation Expenses—Statistics of Operation Used as Bases for Unit Costs—Analysis of Fluctuations in the Revenue Train Load in Freight Service—Analysis of Fluctuations in Traffic and General Expenses—Analysis of Railroad Operations Based on Data in Annual Report to the Interstate Commerce Commission—Appendices, including the Interstate Commerce Commission accounting classifications.